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A GREAT deal of discussion is now going on in New York in relation to the new building law which is pending before the Legislature. We are not sure that we are in possession of the exact text of the bill at present under consideration, and therefore refrain from attempting to criticise it, but our impression is that it curtails to a certain extent the discretionary power given under the present law to the Inspector of Buildings, besides defining and correcting some of the imperfect provisions relating to other matters. Among architects and builders the proposed law seems to be regarded with very various feelings. Some of the best architects, particularly, consider that any law which restricts construction by the rules of a single inelastic system is objectionable, and believe that the end which all regard as desirable would be best gained by a statute laying down a few general requirements, but leaving architects to exercise freely within those requirements such skill and inventiveness as they may possess, subject, however, to a strict accountability for the consequences of any error or carelessness. Others, perhaps with equal reason, think that although unnecessary sacrifices of convenience or appearance are often made in order to conform to the present law, it is unsafe to allow irresponsible builders that liberty in matters of construction which might, with great advantage, be conceded to skilled architects, and that, since speculators of this kind can only be controlled by a minutely detailed statute, or by the orders of an inspector armed with a very wide discretion, it is better, of these two alternatives, to choose the former.

THE Chicago Master-Masons' and Builders' Association has issued a rather spicy circular, reciting the defects of the ordinary forms of building contracts, and calling upon fair-minded persons to adopt better methods of making agreements for such purposes. To assist them in doing so, the circular contains as an appendix a new model for building agreements, which seems to have some excellent points. Before criticising this, however, the circumstances which led to its preparation should be understood, and it appears that the Association has had its attention called to several provisions in contracts recently carried out which seem unfair and wrong. In some cases these have caused serious misunderstanding, and in many others they might become the means of injustice and oppression, and would become so except for the integrity of the architects, who are made the sole judges of the mode in which they are to be interpreted, and usually exercise their discretion with a fairness which blinds the incautious builder to the injury which he might suffer if a less honorable person should undertake to use the same authority to suit his private ends. As examples of the provisions which the Association considers to be objectionable, the circular quotes some rather curious clauses, one of which, for instance, says that "Omissions which may occur in the plans and specifications, and be discovered during the progress of the work, will be required to be supplied by the contractor, as if the same had not occurred." The clause reminds one of the specification for a certain public building, which wound up by remarking that "these specifications are to be regarded as including everything necessary for a first-class building, whether the same are particularly mentioned or not," and it is not surprising that the associated builders should object to it; but other matters are condemned which we should be sorry to see omitted from building agreements.

IN particular the circular denounces the very common practice of prefixing general conditions to specifications, on the specious, but not very sound theory that "the builder's contract consists of three instruments, viz: the plans, comprising all drawings necessary to clearly set forth and illustrate the design; the specifications, to describe and specify the character of materials and workmanship to be employed in the execution of said design, and to elucidate the same on such points as may be found impracticable to show on plans, and give such further information to the builder as he may need to estimate on the cost of the work referred to, or for the correct execution of the same; and the articles of agreement, which should contain all conditions and covenants entered into by and between the parties thereto, and define the rights and duties of the architect," and that "while these three instruments are correlative parts of one whole, they are distinct in their nature," and neither should contain matter properly belonging to any of the others. The objection to this argument is that the general conditions, which recite the responsibilities which the builder is to assume, furnish him with quite as much information respecting the cost of the undertaking as any part of the specification, and nothing is more annoying, to the architect and owner as well as the builder, than to find it necessary, after an estimate has been submitted in accordance with the specification, to add something to the price, or go through further negotiations, on account of provisions in the contract which the owner wishes to insist upon, but which the builder had not contemplated in his estimate. Of course, it is essential that the general conditions and the contract should not contradict each other, but if care is taken to make each of these include all the provisions which are to be regarded as essential, the submission of an estimate made in accordance with them, as well as the remainder of the specification, will show that the builder understands all the conditions which may affect his offer, and a contract including the same conditions can be signed without disappointment or discussion, while a simple acceptance of the tender, often the only contract made between the parties, will bind both to all the provisions which the general conditions express.

THE investigation into the causes of the fire which occurred a few days ago in the large apartment-house known as the Cambridge Flats, in New York, causing the death of two persons, is of great interest to those who occupy such buildings. It seems that the fire, which caught in the lower story of the building, ran up through a light-shaft, enclosed by plastered studding, filling the upper rooms and halls with smoke. Most of the occupants who found themselves in danger easily reached the street by means of the fire-escape at the rear of the structure, but of the two ladies who lost their lives one was too old and feeble to attempt climbing down seven stories of iron ladders, and with her daughter endeavored to descend the stairs. If she had been as active as most persons, this might have been accomplished safely, but even the fear of death could not give her power to make very rapid progress, and with her faithful daughter, who would not leave her, she was overtaken by the smoke and suffocated. Although the building was constructed in accordance with the present building law of New York, which many persons already find too strict, it is plain that such a result was, under the circumstances, unavoidable. That fire should ascend from the basement through the nearest open shaft is a matter of course, and it is equally a matter of course that if such a shaft is lined with plastering on wooden laths and studding, the laths will very soon curl, and throwing off the plaster will take fire and increase the conflagration, at the same time transmitting it to the stories above, and the smoke from the rapidly-increasing fire is sure to burst out through the windows which open on the shaft, and fill all the

rooms which communicate with it directly or indirectly. According to the Inspector of Buildings, there is now no way of requiring such shafts to be constructed of fire-proof materials, as they certainly should be. If, as he thinks advisable, they were left open at the top, the statute would regard the partitions enclosing them as external walls, to be built of brick, but if they are simply covered by a skylight they may be considered as enclosed by partitions, which can, under the law, be of wood-work.

A SINGULAR problem in engineering is presented to the committee which has in charge the construction of the pedestal for the great statue of Liberty in New York harbor. About eighty thousand dollars out of the necessary two hundred and fifty thousand have been raised, but nothing has been done about the work. It is probable that operations would be begun at once with the funds in hand, if it were not that no plans have been made, and no architect or engineer has been engaged to make them, the committee not having been able to find any member of these professions willing to contribute them for nothing, or rather, for the "great credit" which, "if properly done" they will "reflect upon the designer and engineer." As the value of the drawings and superintendence for the pedestal alone, to say nothing of the responsibility of seeing the statue placed safely upon it, would be about twenty-five thousand dollars, we fear that the committee will look long before they find the individuals whom they seek. The task itself, independent of any consideration of proper payment for the time and responsibility involved, is not one that the most skilful engineer would wish to undertake hastily. The statue weighs, complete, only about eighty tons, but presents an immense surface to the wind, and stands, moreover, on a comparatively small base. Considering that it is not extremely easy to construct a brick chimney of the same height, — one hundred and forty-eight feet, — weighing ten times as much, of pyramidal form, and standing on the ground, so as to resist the force of a storm, the difficulty of raising and securing the statue, not on the ground, but on the top of a pedestal nearly one hundred and fifty feet high, is apparent. There are no precedents for anything of the kind, and it will hardly do to secure the figure by the rope stays, like those of a derrick, which the incapable engineer would naturally resort to. The members of the committee seem themselves to have perceived something of the difficulty of the undertaking, and have telegraphed to France for instructions as to the mode of doing the work. We do not generally volunteer advice, but it seems to us that the plan said to be employed by the Japanese for securing their light pagoda towers against the effects of wind, by means of a long weight, or pendulum, hung from the top of the tower, and reaching nearly to the floor, might perhaps be employed with good effect for the New York statue. A very similar device, applied by Sir Christopher Wren, has for two hundred years held up the spire of Salisbury Cathedral, as well as those of one or two other English churches, in which a heavy wooden framework, extending as far downward as the construction of the tower permits, is suspended by strong iron bars from the cap-stone, free to swing in any direction. The effort of the wind on one side of the spire inclines it until the hanging framework rests against the opposite side, but when the pressure is relieved, the pendulum swings back, bringing the stone-work with it into its original place.

AN enterprise which was first set on foot in Baltimore and Boston, has recently been extended to New York, in the shape of what is called a Title Company, the officers of which obtain copies of all records relating to real estate, and make abstracts of the title to any given pieceof land on the payment of a reasonable fee. As this work is now generally confided to lawyers, who are obliged to spend a good deal of time in following up a given title, and of course make a charge to correspond, the Title Company expects, with great reason, that its abstracts, which can be very quickly made by persons having its facilities in the way of classification, and familiarity with the deeds of any given place, will be much sought after by those who wish to avoid the expense of employing a lawyer for the same service. In Baltimore, where the company is already prepared for business, five dollars is the regular fee for searching any given title, and a guaranty of its accuracy is given for an additional premium of one dollar for each thousand dollars of value involved. For some reason, the copying of the records has been opposed by the Registrars of Deeds in Baltimore and New York, who probably have a vague notion that no one has a right to the possession of duplicate records, but this feeling is likely to disappear as the value to the community of better facilities for obtaining clear statements of the validity of deeds and mortgages of real estate becomes more fully demonstrated. There is an immense amount of work, in the shape of comparison of boundaries, tracing of inheritances and dower, and verification of names, which no lawyer can undertake in the course of his examination of a single title, and no Registrar of Deeds can enter into, but which, if properly done, would save continual disputes and losses among the owners of real property, particularly those of small means and limited experience; and if any company will thoroughly accomplish this task, which is a long, but not a very difficult one, it will deserve the thanks both of the rest of the community and of the lawyers themselves, as well as such fair remuneration as it may ask.

AFTER a great deal of discussion, a lease for ten years has been given to an association of capitalists of a number of small tracts of land in the Yellowstone National Park. The lease comprises seven tracts of land, aggregating ten acres in extent, and it is provided that no tract shall be within a quarter of a mile of any of the Geysers, or of the Yellowstone Falls, and that no building erected upon any of them shall obstruct the view of the natural curiosities of the Park. In return for these rather meagre privileges, the association agrees to erect at once a hotel near the Mammoth Hot Springs, to cost one hundred and fifty thousand dollars, and to contain at least two hundred and fifty rooms, and also to construct six smaller hotels, upon plans to be approved by the Secretary of the Interior. The lease contains also a clause prohibiting any employé or agent of the association from killing any deer, elk or buffalo in the Park. The large hotel is to be begun at once, in the hope of completing it in time for receiving guests this summer. Notwithstanding the clamor made about the leasing of land in the Park, we are disposed to think that the public is to be congratulated upon having found any one willing to spend so much money in building upon land granted for so short a term, and we cannot see why the lovers of nature should not be pleased to think that future tourists will be decently and comfortably accommodated in the Park, instead of being obliged to camp about over it, leaving everywhere the disgusting exuviæ of their sojourn.

A SUCCESSFUL attempt was made a few days ago to communicate by telephone between New York and Cleveland, a distance of seven hundred and one miles. The lines of the Postal Telegraph Company, which are of heavy copper wire, presenting a very small resistance, were used, and with the Gray and Dorrance instruments not only conversation was perfectly heard, but the minor sounds about the offices, such as the handing of the receiving telephone from one person to another, and the comments of the bystanders in the room, were clearly audible. This is, if we are not mistaken, the greatest distance at which telephone communication has yet been held, and the success of the experiment promises a great extension of the use of the instrument. Before this trial, the longest wire over which conversation had been carried on was, we believe, that of the Rapid Telegraph Company, between Boston and Baltimore, a distance of about four hundred and fifty miles. The wire used by the Rapid Telegraph Company, like that of the Postal Company, is of very low resistance, and with the ordinary Bell telephone conversation was readily heard.

THE Moffat Building in New York, a conflagration in which came near destroying the records of the American Institute of Architects, stored in the building in the office of the Secretary of the Institute, took fire a second time a few days ago, and, as usual, the first intimation of the occurrence was given by the light of a blaze which filled the upper story, bursting from the windows and skylights. The portion of the building in which this second fire occurred was unoccupied, and the total loss was less than ten thousand dollars, but the reputation of the structure as a storehouse for valuable goods, which has never been very high, will suffer still more from its having been the scene of two conflagrations within a month, each of them sufficiently serious to require the help of a large portion of the fire department for extinguishing it.

CONSTANTINOPLE.

IT is difficult to separate any one set of ideas from among the many fancies suggested by a first acquaintance with Constantinople.

History, romance, love of form, color, all assert their claims upon the imagination, and form a varied web, through which it is difficult to follow a selected thread.

Now-a-days, studied architectural effect has little to do with the appearance of a city from a distance. The time is past when a group of temples, with relative positions and combined effect carefully adapted to the *point de vue* of the surrounding country, crowned the acropolis of towns whose houses were simple, unobtrusive masses of gray stone, blending with the site upon which they were built, or when porticos and terraces rich with statues were meant to be seen before the city gates were entered. The best that can now be hoped for is a picturesqueness arising from the lines of the site itself and the grouping of buildings, occasionally accented by one more prominent than the rest. This picturesqueness Constantinople has in a marked degree. Important buildings have naturally gravitated towards commanding sites, and the mosques have been founded upon the highest points, and rise above the lines of houses upon the Golden Horn and the streets clambering up the hillside. Little wonder that the band of Greeks, seeking to fulfil the prediction of their oracle that they "should dwell opposite the blind men," held that the people of Chalcedon must have been blind to have neglected this peninsula: a long ridge, jutting out into the Sea of Marmora, commanding a view of the Princes' Isles and the range of Bithynian Olympus above the Asiatic shores, it is — apart from its strategic importance,— one of the fortunate spots of the earth.

Along the shores of the Marmora, around the Seraglio Point and far up the Golden Horn stretches the wall of Aurelian, broken here and there by masses of buildings or dark groups of cypresses in the Seraglio gardens; the towers attacked again and again, still rise from the sea, while above them is the hillside covered with clustering houses of all hues and descriptions, toned into harmony by age, and here and there flecked by the light reflected from the dome of a mosque. Above rise the great mosques, Santa Sophia, and those of Ahmed I, Suleiman the Magnificent, Mohammed II, Bayezid and Osman, each with its small domes bubbling up to the base of the great one, its minarets rising into the sky in delicate spires. The lines of wall, the dappled mass of houses, the sweeping curves of the domes and perpendicular lines of the minarets — all add elements that contrast with and enhance the others, while across the Golden Horn and the mouth of the Bosphorus Galata and Scutari repeat the beauties of Stamboul, as in a fantastic mirage. Nor is the spell that seems cast over the eyes of the traveller broken upon landing and entering the streets; it still remains enchanted ground for the artist and scarcely less so for the architect. Picturesqueness is omnipresent: there is not a phase of occupation, a mode of doing or being anything, that is not intensely picturesque. The most trivial event takes color from such a setting. It is all an embarrassment of riches from which, when one subject has been selected, the astonishment is that it is so simple after all. In the long lines of seductive shops, each is an apartment with the entire front open to the street, the opening spanned with a sweep of arch, built frequently of alternate voussoirs of stone and thin Roman bricks. The tympanum is occasionally filled with a turned iron grille, or a thin stone pierced with quaint Eastern devices. These shops are closed at night by long, narrow shutters, panelled in various ways and folding into the jambs of the piers during the day. Within there is a confusion of shelves and cases of dainty design; the backs and sides of the divans and of the little tables for the universal coffee are worth noticing. They are usually simple in form and richly inlaid in geometric patterns; and as for the brass and copper utensils, the arms and vases, the bits of decoration upon them are numberless, even the Persian and Turkish inscriptions being decorative. The Eastern arch, like the Eastern dome, is of two kinds: the first, a low sweeping curve; the other (Fig. II, Plate C), a pointed arch, springing for a short distance in a perpendicular line, then curving inward more or less abruptly, then taking nearly a straight line to the apex, which often becomes slightly flamboyant at the very point of the arch. The line of this arch is very subtle and pleasing. It seems to have been of Turkish origin, though probably the Turks received it from the Arabs or possibly from the Persians, when they reigned in Persia A. D. 1000. Most of the Turkish work appears to have been derived and adapted from that of other nationalities, naturally enough, as the Turk was but a hardy mountaineer forcing himself as ruler upon the nations of the East by sheer strength, and he has graced his rough-hewn kingdoms with the delicate fancies of the people he conquered. It is amusing and not uninteresting to trace the various strains of architecture which have been mingled in Constantinople. First was the Greek, whose sense of color and fine detail united with the later Roman massiveness and luxuriousness gave rise to the Byzantine, with its arches and mosaics; later came the Turk, who adopted the Byzantine forms and applied to them Persian and Saracenic detail; and last of all was adopted a diluted form of that worst of styles, the eighteenth-century Italian Renaissance, which made hideous all it touched—which was fortunately little. There seem to have been two acknowledged rules amongst the Eastern nations: first, to keep the masses broad and simple; second, to focus detail and make it interesting. No other methods could be better in their results. Projections are slight; decoration is kept flat and counts as a rich surface; and all ornament is strictly conventional, as the Koran forbids the introduction of any representation of animal form.

The earliest Byzantine churches, built in the fifth and sixth centuries, have now become mosques or jamisis; the mosaics representing Scriptural scenes are covered with plaster; the frescoes show dimly through a coat of paint. Their plans are similar throughout: a narthex; a series of north and south chapels connected with the main rectangular body of the church by arched openings, and lighted by domes, each with a circle of small windows at its base; a large semi-domed apse, often with semi-domed niches in its walls, and a great dome over the body of the church. The plans of Santa Sophia and the larger mosques are but elaborations of this, with a multiplication of parts and the addition of galleries.

The interior walls of the Byzantine churches are covered with sheets of colored marble, the two adjoining pieces having been sawn from the same block and opened like the two adjacent pages of a book, the veins rippling away from each other. In the centre of such rich expanses is often a piece more precious than the rest or some bit of quaint carving framed in a white or gray moulding, and above the doors or below the mosaic ceilings the mouldings become richly carved. This Byzantine carving though simple in character is not easily described: it depends for its effect upon sharp outlines, accented by deep cutting and usually decorates a simple form (Plate E). In the decline of Byzantine work it was coarsely cut and became merely quaint, but during the fifth and sixth centuries in Constantinople it was probably cut by Greek workmen, and was very delicate. The capitals of St. Mark's in Venice, though executed later, have much the same excellence as the best work in Santa Sophia. The impression felt upon entering Santa Sophia is marvellous. The great size and height; the warm gray tones of the masses of shadow; the richness of the porphyry columns and delicate chiselling of details; the expanse of floor stretching off into dim shafted chapels, and the great dome, misty and undefined, spreading above, letting through its circle of windows shafts of light upon the worshippers and sending back the voices of the Mollahs as they call upon Allah in a monotone — all combine to produce sensations that are not readily forgotten. In the evening of a winter's day, when the triple circlets of lamps are lighted and send a strange light flickering into the depths of shadow, the effect is even more wonderful.

The later mosques have their walls plastered, and that of Ahmed has the pendentives supporting the dome carried by clusters of columns which form massive piers. Most of the decoration in the interiors of these mosques is bestowed upon the Mihrab, or pulpit, which is frequently made of inlaid marbles and mosaics. The doors are sometimes of bronze, with intricate geometric patterns in the panels inlaid with silver and pearl (Plate B). These geometric designs are favorite forms of decoration, and are often extremely ingenious. They are based upon a system of regularly disposed accented centres, usually in groups of three or five, the intervals filled with varying designs. The designers seem to have particularly appreciated the decorative value of superimposed ornament, there being often three distinct planes of ornament in a single design, the lowest always being the most involved and least defined, the others becoming stronger and simpler in proportion as they approached the surface. The doors of the outer courts of the mosques are usually of wood, the designs being either incised or applied with mouldings. Each mosque has at least one inner, or mollahs' court, and an outer court entirely surrounding it, the openings from one to the other being filled by stone grilles; below these openings, or occasionally along the sides of the mosque, are a row of fountains for the use of worshippers before entering the great doors. It is upon these fountains, as well as upon numerous others scattered about the streets of the city, that the wealth of imagination of the Turk has been most freely lavished. He seems to have taken great pleasure in covering the surfaces of marble above these cool basins with designs, and to have carved them with a joyful exuberance. Every conceivable fancy has had its way with them, yet always with some peculiarity of execution that stamps the decoration with an individuality different from all others (Fig. III, Plate C). This is owing in a great degree to the fact that the face of all the ornament is kept upon a parallel plane with the ground and but slightly raised above it; the outline is distinct and never melts into the ground, light and shade being obtained by cutting within the profile and not into it. This is one of the simplest and most conventional styles of carving, and one of the most effective. It occurs in the Byzantine carving of the seventh and eighth centuries, in a peculiar style that obtained for a short time during the Renaissance, and can be seen to-day in the ornaments upon Venetian gondolas. There is another style of carving upon the Turkish fountains that is very different both in subject and manner of execution (Fig. III, Plate C). The design is usually enclosed in a panel and represents a cluster of flowers in a vase. It is distinctly Persian in character; the flowers are disposed in regular sequence and form highly raised centres from which the rest of the design recedes and gradually melts into the ground. The most universally used ornament, however, is that which in its simplest form seems to be a substitute for

the classic egg-and-dart moulding (Plate A, Fig. III). Though simple in its first form it becomes complex and involved until at length it seems a frost-work crystallizing about the forms it decorates. (Plate A, Figures III and V). Cornices, corbels, capitals (Plate A, Figs. I, VIII, IX and X), all partake of the character of this peculiar form of ornamentation. The galleries of the minarets are rich with it, the heads of the niches (Plate A, Fig. II) at the mosque doors are filled with a net-work of it. It varies constantly, but is always based upon some simple crystalline form, complicated by a repetition of parts.

There is little to be said of the street architecture of Constantinople, beyond noticing the picturesque effect of the projecting stories of the houses, each brought forward of the one below it on long diagonal brackets, while bay-windows of all sizes and descriptions, mere fabrics of lattice-work, jut out in every direction (Plate D). The lattices are not turned as those of Cairo but are plain, crossed bars. Occasionally the ground floor is of stone, but is usually of wood, like the remainder of the house. The interior is planned at the will of the occupant: there seems to be no favorite system of arranging rooms, and with the exception of the room where guests are received, which is lighted by one large, divanned bay, there appears to be no concession made to custom. Courts with fountains, though frequent, are by no means usual.

There remains one other peculiarity of Turkish decoration, that of the use of color upon marble. The material of which the mosques and fountains are built is a somewhat coarse white marble which takes color readily, and the ground of the Turkish inscription and ornament is often tinted with pale blues and greens or dark reds, while the carving is picked out with gold. The effect is excellent. There is but little tile-work, and that little of Persian tiles.

The Byzantine mosaics are almost all covered with paint or plaster: what few can be seen are very deep and rich in color, usually with gold and colored designs on a deep blue or green ground. The mosaics in the small church of SS. Nazario e Celso in Ravenna approach them very nearly both in design and color. The mosaics cover the entire ceiling and domes of Santa Sophia as in St. Mark's, and are carried around the corners in a similar manner, all angles being rounded, thus obtaining continuity of surface and obviating the necessity of mouldings. Very little remains of the Roman art that was lavished upon the Hippodrome, or of those statues that were said to outnumber the inhabitants of the city. The iconolasts were thorough in their destruction, and the Constantinople of to-day but little resembles that new Rome that rejoiced in the art treasures of the Ægean, and became the home of Roman citizens; still it has a wealth of interest within its walls, a wonderful charm about its streets, that leave an impression upon the mind unrivalled by the memories of other lands — an impression remaining apart from all others, full of the glamour of the East.

C. Howard Walker.

ZUNI REVISITED.[1]

LATE in November of the past autumn, I arrived at Fort Wingate with the intention of paying a second visit to Mr. Cushing, at Zuñi. The weather was uncharacteristically capricious, considering the stable nature of the New Mexican climate as I had known it in summer. One day the sky was of a stony gray, with cold, dusty gusts and spits of snow; the next would show the familiar overarching cloudless blue, with welcome warm sunshine tempering the bracing air; again, the sky was overcast, but softer, and the warm southwest wind blew, laden with the moisture of the Pacific. New Mexico is popularly supposed to be a warm country all the year round, but it should be remembered that the Zuñi land lies among the summits of the "continental divide," and is higher above the sea-level than the top of Mount Washington. Therefore the winter at such an altitude comes nearly as early as in New England, but it is a far milder season than it is here. Although in a dry country the distinction between winter and summer is not so marked as it is with us, nevertheless it was very perceptible, and Nature's fallow season was noticeable in the absence of hundreds of living, growing things which had characterized the region without particularly emphasizing their existence. Although the arborescent growth of the country is evergreen, and therefore its aspect was unchanged in that respect; nevertheless even the mountains and *mesas* had a sterner and a repellent look; their solemnity unrelieved by certain qualities which in the summer had invested their grandeur with a fascinating charm. Perhaps it was because the grasses and shrubs, now sere and withered, had given a certain tone to the landscape, and although their presence was not noted distinctively then, their absence had changed the whole scale of values in the picture. In the presence of the frowning mountains, the mythological fancy arose that the great gods are ever present, but at this season their troops of attendant spirits have fled, and the mood of the deities has changed.

Major Powell has pointed out, in his paper on the study of anthropology, printed in the first annual report of the Bureau of Ethnology, issued last year, how environment has been an important factor in forming the mythology of a people. It is a life of unknown centuries amid such surroundings as these wild ranges — now tumultuously tossed by volcanic convulsions, at their feet great plains stretching away calm as eternity; now expanding into wide and lofty table-lands, worn remnants of an older continent, seamed with chasms and rent by awful cañons — that has shaped and colored the religion of the Zuñis; dreary, contemplative, and often strangely poetical. But whence came one lovely trait that pervades all their myths and folk-lore, as related by Mr. Cushing, like an interwoven golden thread, gleaming through every fabric — the idea of the ultimate good existing in everything, and that even evil-working causes are but transitory, and become the means to the accomplishment of final good? It seems strange to find a feature like this in the faith of a barbaric race, and it appears to be a proof of an innate gentleness of spirit. Army officers who are familiar with the Indians in peace and war tell me that the more they see of them the more they are impressed by the fact of their common humanity, as evinced by manifold traits brought out on acquaintance, though to the average frontiersman the red man is no better and no more entitled to human consideration than any wild brute. The frontiersman, however, has good reason to fear his hatred, but I regard both his view and that of the "sentimentalist" concerning the noble savage as equally erroneous. It is only by close and sincere ethnological study, such as Mr. Cushing is giving to the subject, that the Indian nature will be seen in its true light. The real value of this study of the races of mankind on lower steps of culture is the light which it throws on many secret springs and motives of human nature, laying bare the processes of development of man on his long journey to the high conditions of civilization. To find a parallel for the same treacheries and savage cruelties which we condemn in the Indian we have to go back but a few centuries and look at our own ancestors.

The sandstone architecture of this region, carved by time with the mighty tools of the elements, is wonderful. I should think it might offer some valuable hints to the student, especially in the way of composition and the arrangement of great masses.

Looking at an *arroyo*, or gully, worn in the hard, firm soil by a water-course born in the rainy season—the plains and valleys are ploughed full of such furrows—I saw the same effects repeated in miniature, the steep sides worn and cut out of the baked red earth by the rains of perhaps but a single summer, being almost identical in form with the huge cliffs of red and yellow sandstone slowly worn by the processes of ages. So it was all only a question of relative magnitude and time.

The humble animal to whose brief life days are as years, and a league's journey a task like the traversing of a continent, toiling along at the bottom of such a gully, may look up at the towering heights of a few dozen inches with the same reverent, awe-struck gaze with which we behold the wonders of the Grand Cañon, or of the Yo Semite; and as that lowly being is ignorant of the features of this structure, the world, which impress us with wonder, because they are beyond the range of his small vision, what greater marvels may there not be in the universe of which our limited senses can know nothing. And perhaps some bright, superior race looks down upon our insignificant doings and strivings, and upon the small features of this contracted drop in the ocean of space, with the same calm contemplation and pity which we bestow upon these lower orders.

I did not expect to see Mr. Cushing until I reached Zuñi, but he arrived at Fort Wingate unexpectedly one evening, having received directions from Major Powell to visit Oraibe, one of the Moqui pueblos, and make a collection of pottery, etc., for the National Museum. The people of Oraibe, unlike those of the other pueblos, have a great fear and distrust of the Americans, owing to the representations of the Mormons, who are incessantly using all the influence they can exert to incite the Indians everywhere against the national government. A recent expedition which visited Oraibe found the place entirely deserted, the inhabitants having fled at its approach, and concealing or taking with them all their valuables. It was therefore a difficult place to make a collection in, and Mr. Cushing, by reason of his standing as a Zuñi, was peculiarly fitted to do the work, which would have been hardly possible under ordinary circumstances.

Having a friend with me who was desirous of seeing the place, I decided to visit Zuñi, although Mr. Cushing was not to be there. He said that we should be cordially received and well provided for, since he was now comfortably established in his own household, where his wife would be found, together with her sister, his brother's wife, and Mr. W. L. Metcalf, the artist. Together with Mr. Graham, the local trader, and Mr. Wilson, the teacher appointed by the government, with his family, there was now at Zuñi a considerable little American community.

The day of Mr. Cushing's departure for Oraibe we were to set out for Zuñi, but the threatening weather of the past week culminated in a severe snow-storm, the first of the season, and therefore we were delayed. That evening Mr. Metcalf appeared at the hospitable door of Dr. Washington Matthews, the post surgeon, numb and half senseless with the cold, having ridden in from Zuñi to see

[1] A paper read by Mr. Sylvester Baxter at the last monthly meeting of the Boston Society of Architects.

about his trunk with his painting-materials, and got lost in the storm while crossing the mountains. The next morning we started in an ambulance, taking Mr. Metcalf and his trunk along; Mr. Cushing's brother, Dr. Enos Cushing, accompanying us on horseback. It was still snowing slightly, but there were prospects of clearing off. It was a cold, dreary drive across the mountains, and wrap ourselves in all the blankets that we might, it was impossible to keep warm, for the keen wind searched every opening and cut like knives of ice. The protracted misery of the trip contrasted sharply with the delights of the previous year's journey over the same road in the sunshine and exhilarating air of early June.

It was dusk when we came in sight of Zuñi from the elevation of the Black Mesa, and dark when we arrived. As we drove up to the town the windows gleamed with the cheery, ruddy light of hearth-fires within, and out of many of the stumpy chimney-pots leaped lurid tongues of smoky flame. Around these fires were probably many groups of old and young, listening to the wonderful tales of folk-lore as they had been handed down for centuries from generation to generation. The sight of a Zuñi fireside in winter goes far to reconcile one to the discomforts of the journey thither. The blazing piñon stick, whose pitchy wood gives a beautiful flame; the changing light dancing over the antique interiors; the great hooded corner fireplace, and the picturesque groups, form a striking sight. The houses are comfortable, the thick walls retaining the heat from the fires which also afford the best of ventilation, and if the Zuñis should learn habits of cleanliness and adopt civilized methods in sleeping and eating they would need no commiseration.

We found supper awaiting us at Mr. Cushing's house, Dr. Cushing having taken a short cut over the trail from Las Nutrias, and arriving about an hour before us. It was the same house, that of the Governor, where we had visited Mr. Cushing before, but how changed it was. For twelve dollars and a few handfuls of broken clam-shells Mr. Cushing had bought four large rooms, which had taken about three months' labor to build—pretty cheap real estate that! Clam-shells are better than gold and as good as silver in Zuñi. "If you ever want to do us a favor," said the Governor to me in Washington, one day, "send us some of these shells, but not too many, for we do not want to spoil their value by making them common." The Governor shrewdly did not want to bear the market.

The rooms were filled with civilized furniture, and where before we had slept on the floor exposed to sundry crawling things, and had eaten from primitive dishes set on a blanket spread on the same, there were now beds, tables and chairs, with an abundance of nice crockery and cooking utensils. A negro cook brought from Washington, and trained in an old Virginia family, presided at the fireplace, whence he conjured up the nicest dishes, and a cooking-stove was on the way for his benefit. The refining touch of woman's hand was everywhere manifest. The room which was occupied by Mr. Cushing on our former visit had been transformed by his wife with charming artistic taste into a luxuriant little boudoir, in the decoration of which the local resources had been availed of in a way that gave it a peculiar interest. The floor was covered with the finest of soft sheep-skins; the walls were hung with Navajo and Zuñi blankets, whose rich and varied hues gave an effect much like Oriental tapestry. A broad divan was also spread with similar blankets, and on easels stood excellent oil-paintings, while rare and curious pieces of pottery were on the mantel-piece and arranged in nooks and corners, with decorations of rich scarfs and draperies tastefully disposed. Pictures, books, and magazines, Japanese screens and a handsome lamp completed the cozy, home-like effect.

The Governor, Pa-lo-wah-ti-wa, soon came in and welcomed me with an embrace, and a gleam of pleasure lighting up his large, dark eyes and dusky face, showed his joy at meeting an old friend. I regretted that Mr. Cushing was not there to interpret the dear old fellow's remarks, but we had to content ourselves with our mutually spare Spanish, and the Governor used, to the best advantage, the few English phrases and words he had picked up in the East. He was very proud of this accomplishment. The Governor had been pretty homesick for the East on his return to Zuñi; he was glad to get back to Zuñi, but the scenes in the "lands of the Eastern Americans" had made a powerful impression. He said that he had brought back but one side of him, and the side where his heart was was still in the East.

The next morning I found Nai-iu-tchi, the senior priest of the Order of the Bow, at his house, and he welcomed with delighted surprise the young man whom, in the East, he had adopted as his son, with the name of Thli-a-kwa, the Turquoise, or "Sacred Blue Medicine Stone." I also saw Ki-ä-si and Na-na-he, but the other two pilgrims to the East, Pedro Pino and Lai-iu-ai-trai-lun-k'ia, were out of town.

It had been a wonderfully prosperous harvest — one so great had not been known for years, and all the store-rooms were piled full with corn in the ear, looking with their many colors like great heaps of jewels — red, green, yellow and blue. The prosperous harvest had been regarded as a proof of the pleasure of the gods at the result of the pilgrimage to the Ocean of the Sunrise, and the bringing of its sacred waters to the keeping of the priests to whose prayers they would give the power to bring bounty to the Continent; for the Zuñis, like the Hebrews, regard their small nation as a chosen people. This happy result of the pilgrimage, as they regarded it, has contributed to advance Mr. Cushing's influence among them.

Poor Na-na-he, however, the giddy-headed Moqui, whose grace and agility had made him a favorite in the East, was in deep disgrace. When he returned with the other three in May, he immediately hastened to his old Moqui home to relate the wonders of his journey to his people. As seven large demijohns of the ocean water had been given to the party by the city authorities of Boston, Na-na-he believed himself entitled to a share out of such an abundance, and he promised the Moquis, whose religion is the same as the Zuñis, that when the water came they should have one demijohn of it.

When Mr. Cushing arrived in September with Pa-lo-wah-ti-wa and Nai-iu-tchi, who had remained with him in Washington and the East, the party was received with great state, and extensive rejoicings were instituted; and when the demijohns arrived there were elaborate solemnities in the honor of the water. To attend these the Moquis sent a deputation of their leading men, who were also to receive and bring back the vessel of water promised by Na-na-he; but Na-na-he had promised without the power of fulfilment. The Zuñis said that the water was theirs; they should have the entire credit and glory of bringing it, and the honor thereof should rest with the Zuñi people. If the Moquis wanted any water from the Ocean of the Sunrise they could go and get it themselves, but from Zuñi not one drop should they receive.

The result of this was considerable coolness between the two nations, but the Moquis acknowledged the justice of the Zuñis' position in the matter, and friendly relations were not interrupted. The wrath of both peoples fell upon Na-na-he. He lost the importance which the honor of making the journey had given him among the Moquis, while in Zuñi he forfeited the promised and coveted promotion to high orders, and went about in deep disgrace.

It was the height of the dancing season in Zuñi. There were dances at night in the houses and in the temples, and frequently by day in the open air. There was a public dance that day, and in the clear, crisp morning air we could hear the weird rhythmic chants of the dancers, strikingly like the voices of the wind, sounding over the house-tops from the Dance-Place. Climbing over the roofs we found the terraced sides of the amphitheatre-like rectangular Dance-Place covered with a blanketed multitude — an intense contrast of bright-hued raiments, brown faces, and glossy black hair against the sunny blue sky and dazzling snow. Down in the Dance-Place was a line of strangely-costumed dancers, all arrayed uniformly with the exception of the priest of the dance, who stood at the head of the line unmasked and motionless. All the others were masked, and upon their heads were tall mitre-like arrangements of thin, brilliantly painted and decorated pieces of board, cut into a trinity of scallops at the top. Their bodies were naked and painted a dark brown, and their necks and girdles were surrounded with fringes of spruce twigs, giving a ruffle-like effect. Gourd rattles in their hands and tortoise-shell rattles on their heels gave a strongly accented accompaniment to their singing, and to their solemn, measured steps. There was an orchestra of about half a dozen Indians dressed like women, all beating drums. This dance was probably the ceremonial of some single order. In the dance which I witnessed in the summer of the previous year, and described in an article printed in *Harper's Monthly* for June, 1882, each figure was differently costumed and masked, and represented some mythological character.

The intervals between the dances, when the dancers retired to their estufa for devotional exercises, were, as usual, filled out by the clown-like characters known as "mud-heads;" men curiously masked with laughter-provoking and piggish-looking faces, entirely nude, and painted from head to foot a light clayish color. These grotesque fellows played the most amusing tricks, and cracked jokes which provoked the merriest laughter from their public. One of their performances was particularly interesting. There were eight mud-heads altogether, and at the conclusion of a dance they came into the court, each with a number of bright-colored ears of corn tied together at the ends and hanging horizontally. They also bore large baskets filled with squashes and dried fruits. Eight women, matrons and young girls, were selected out from the spectators. Their blankets were taken from their shoulders and placed in one pile, while the corn and baskets of the men were placed in another pile; then a sort of lawn-tennis line was made across the centre of the court by scattering meal. On one side of this stood the eight "mud-heads," and on the other side the eight women. Each side stood in a line, single file, the one behind grasping the shoulders of the one in front; the two files faced each other, and all the men jumped simultaneously sideways to the right, the women at the same time jumping in the opposite direction, as if to avoid them. This play was kept up some little time, until the men caught the women. Then followed a sort of "tug-of-war," each side trying to pull the other across the line; the men made mock efforts at stubborn resistance, but the women pulled them across inch by inch until their line was about half-way upon the women's side, when it broke and the rear half fell upon their backs while the front ones were jerked suddenly across. The victory of the women was hailed with laughter and applause, and they gathered up as trophies the corn-ears and baskets of the men, together with their own blankets — all of which had evidently been deposited as a wager—and retired. During one of the intervals two ferocious-looking figures, with masks of infernal aspect and painted entirely in black, walked across the court and entered the temple, or estufa. They were followed by several boys, ten or twelve years old, clad in the brightest and cleanest of new blankets, and walking as if being led to slaughter. They were

probably children who by right of their hereditary rank — members of a sort of aboriginal nobility — were to be initiated into an order where they belonged. Poor boys! according to all accounts their ordeal was to be no child's play. One of the "mud-heads" crept cautiously to the window of the estufa and peered in, but started back in affected terror as if the sight were too awful to behold.

The dancing ended at sunset. We spent another delightful evening with the Cushings, and the next morning we set out for Fort Wingate.

THE LATE AMERICAN ARCHITECT COMPETITION.

REPORT OF THE JURY. — I.

"*Bumpkin*," (see *American Architect* for March 3) in the judgment of the jury deserves incontestably the first place in the competition — not that his plan is more convenient nor more practical than some others, but because his design has a certain distinction which, by removing it from the ordinary type of suburban cottages, answers to the requirements of the programme, suggesting that the occupant of this cottage has more social prestige than his neighbors. A number of competitors offer us examples of the typical cottages to be found in countless numbers in the environs of our cities. Such designs are naturally ranked, however practical and convenient, after those which, like "*Bumpkin's*," combine practical excellence with a more novel or more artistic solution of the problem. "*Bumpkin*" shows great skill in infusing with a remarkably picturesque treatment the reserve and dignity which should distinguish suburban from rural architecture, and while there is no evidence of the author striving to be original and nothing that can be called eccentric in the architecture, it is a most fresh and unexpected conception. The plan provides a piazza which is partially roofed for summer, while a vestibule to the hall answers to the requirements of a winter dwelling. The parlor and dining-room communicate with each other and with the hall. The kitchen has an ample porch, which would, perhaps, better have been utilized for a shed, or wash-room. There is a cellar under the whole house. A furnace is depended upon to heat the various rooms, except the parlor and dining-room, which have open fireplaces. The second-floor plan is good, except that the back stairs are brought up in such a way as to waste some valuable space: by changing their position to the left side of kitchen this might be avoided. The main stairs continue up in a tower to the attic, where another room is obtained. The specifications are careful, and serve to show that the grade of work in the house is what was intended by the programme. This was all the latter calls for, and the jury did not consider their attention directed to the items of the specifications, and they have given all the latitude possible to the question of expense. "*Bumpkin*" is one of those coming closest to the sum named, but it is doubtful if any builder could afford to complete the house at the prices given. The appropriate details and brilliant drawings reveal a trained artistic hand.

"*B. S. S.*" (see Illustrations) has devised a plan which would be comfortable both in summer and winter. The front door is shut off by a vestibule, and the hall is not too large to be easily heated in winter. On the other hand the hall opens generously into the parlor which communicates by a wide sliding-door with the dining-room. Thus these rooms would in hot weather form an airy suite; their large windows would give ample draughts, and the porch serve as an agreeable summer veranda. The kitchen is well placed but no back door seems indicated. This could be easily remedied. No cellar plan is given, but it would form an important feature in the house, judging from the fall of grade shown in the perspective sketch, and would afford room for a well-lighted laundry and storage-room. The front and back stairs are ingeniously combined to meet at a common landing and thence follow the slope of the roof in a single common flight. One large room is provided, leaving beside the servant's room only two others. One of these is very small, but might be enlarged by reducing the size of the closets, and perhaps by shifting them over to the other side. The passage-way from the large chamber is an unnecessary luxury, and by entering where the bath is and shifting it to the opposite side another closet could be made. The position of the bath-room is the weak point in this plan, as economy requires it to be placed near the kitchen plumbing. The exterior is charming, quaint and homelike. There is nothing of the "suburban villa" about it; it is emphatically a comfortable cottage. The stone chimneys are treated in a novel manner, and throughout the design an effective play of light and shade is attained by simple means, if we except the roof, whose three small gables look extravagant. Their united cost would have carried up a roof with space for one or two more chambers: at least the middle gable might have been omitted and the luxury of the narrow balcony might then have been passed over more readily. The drawings are clever and show the simplicity of long practice. The specifications do not allow enough for the various items, and especially the cost of so high a basement and a stone outside chimney is underrated.

"*Danfors's*" plan (see *American Architect* for January 20) is one of the "vernacular" types above alluded to; but it is so perfectly carried out, both in plan and elevation, and the whole design is in such excellent taste, that it gains a certain distinction of its own. The plan is most economical; there are no back stairs, and the roof is of the simplest, so that "*Danfors*" has built a brick first story on two sides of the main house, and yet kept within a reasonable cost. This bit of brickwork is a great gain in giving a cosy and substantial look to the cottage. It would have been prudent to have cut off a portion of his hall for a vestibule; on the other hand, the entrance to the kitchen is well sheltered and cleverly placed. The stairs leading out of the hall are graceful and take up but little room. Cellar-stairs are indicated, but nothing is told us of the cellar, and a furnace finds no mention in the specification, but as only one of the bedrooms has a fireplace, this may be presumed an accidental omission. Beside the four chambers of the second floor, there is room in the attic for two more; but one of these would not be available unless the stairs landed in the middle of the attic, instead of at one end as now arranged. The drawings show a crisp, sparkling touch. The details are appropriate to the simplicity of the cottage, and are in harmony with the general design.

"*Moses*" (see *American Architect* for March 3) has, by his square, compact plan, kept in view the small rectangular lot on which the proposed cottage would probably be built. In most suburban lots an irregular and broken plan wastes the ground, for unless planned with great skill, the proximity of a portion of the building to a neighboring house is as bad as if the main house stood at that same distance. The fact that the veranda is reached only from the house shows the reserve which should distinguish a suburban dwelling from a rural one. On the left of the long, narrow hall, which too much suggests a city house, are library and dining-room opening together by wide sliding-doors. The narrowness of the hall is emphasized by a fireplace which is entirely out of place in such cramped quarters. The stairs lead, however, to a more generous hall on the second story. This hall and the stairs are lighted by a dormer overhead, by which a pretty effect might be managed. The chambers are not as well arranged as they might be, and the result is a loss of space which leaves only three bed-rooms on this floor. Two rooms, however, are to be counted upon in the attic. A point to be noticed in this plan is the ingenious way the cellar-stairs lead down from the kitchen under the front flight, there being no back stairs. The details of the interior show refinement and thought, and should go far towards giving the cottage the air of distinction we before have insisted upon, but they threaten to expand the cost beyond a reasonable limit. The items given in the summary of expenses are all very low — too low for any builder to gain a fair profit upon. Taking for example $123.50 as the cost of two unusually high and large chimneys and the provision made in the basement for a furnace, then add to that six open wood fireplaces, five of which are in corners, and it would require an adventurous builder to undertake the contract. The furnace is not mentioned in the specification, but the cost of open wood-fires all over the house would result in a partial use of furnace heat. The details are neatly and attractively presented, but the perspective, in spite of its careful drawing, is scratchy and dry in rendering. As a whole, however, this design is one of the best, and deserves a high place in the competition.

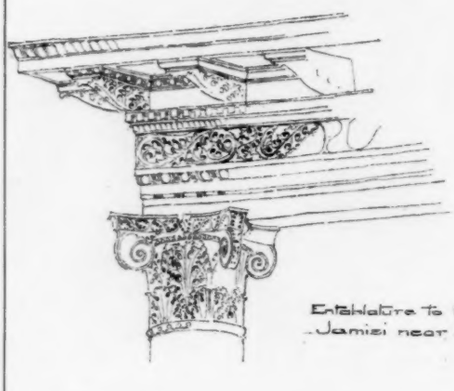
"*Pecksniff*" presents an attractive cottage to the eye — one of the best in proportion and in judicious distribution of interesting features, each elevation presenting a point of interest against a background of sufficient plainness to give it heightened effect. The design is picturesque and yet is not without dignity. The details are sober and refinedand show a keen artistic appreciation of architectural propriety. Unfortunately "*Pecksniff's*" facile fingers have run away with him. Within a most charming exterior he has jumbled his rooms together with the most wanton carelessness. His point of departure seems to have precluded all consideration of a winter dwelling. After a vestibule is passed one enters directly into the "living-room," from which the stairs open. Such an arrangement might be tolerable in warm weather, but impracticable for winter use. But even tropical customs do not justify making his only access to the family bath-room directly from the dining-room. The front and back stairs are combined in a way more complicated than ingenious. On the second floor the rooms open conveniently into each other, but are carelessly cut up. Though one of the five chambers is indicated for a servant's room, there is ample space in the attic for one or two more rooms, but no means of access is provided to it. "*Pecksniff*" might by a thoughtful economy in the size and arrangement of his rooms, bring his now too expensive scheme within our limits of expense. His schedule of costs is misleading, especially his item of $25.00 for plumbing, which, even were a convenient place for the bath-room near the kitchen pump provided — instead of its present impossible position — is quite inadequate for modern requirements. It is to be regretted that one who is capable of such excellent design, should appear so utterly incapable of devising or studying a plan, and we recommend to this competitor careful study of the principles and details which govern plans.

(*To be continued.*)

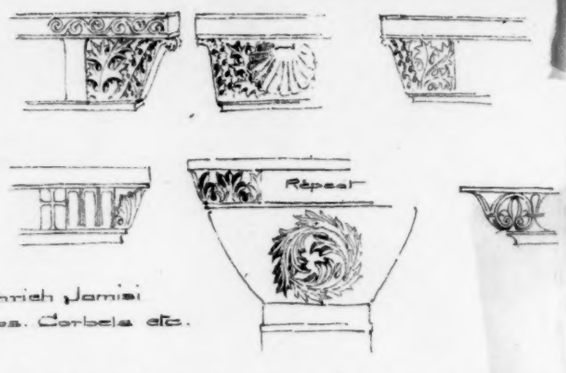
PLATE E.

CONSTANTINOPLE

Examples of Byzantine Ornament.



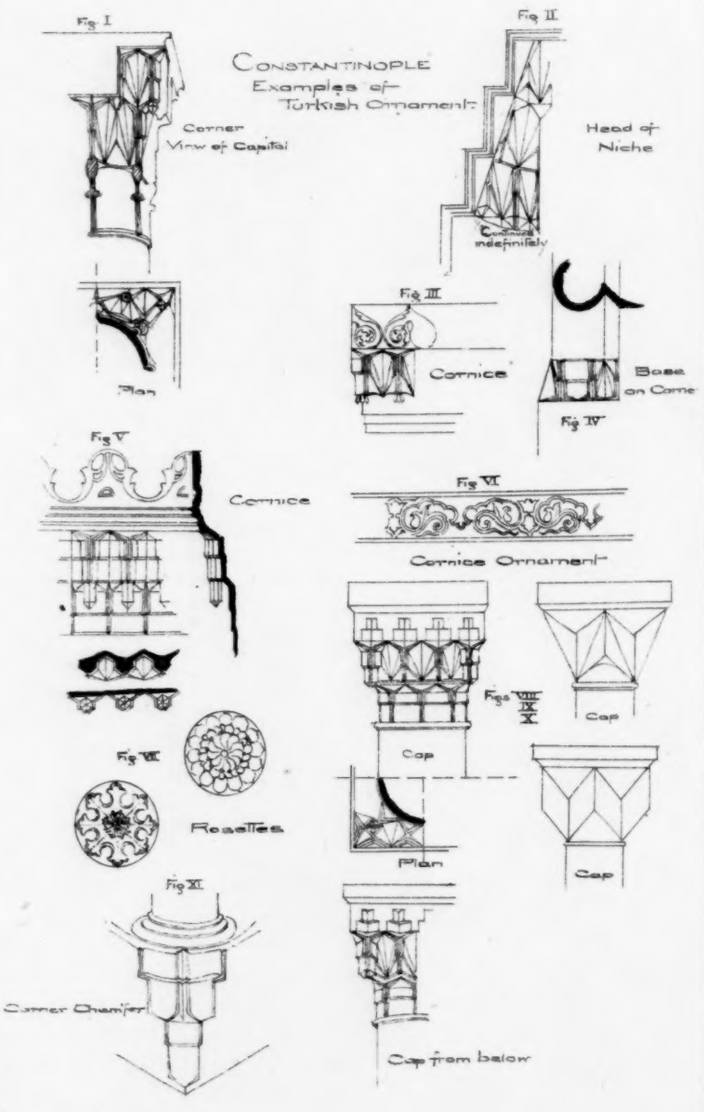
Entablature to Porch of Jamisi near Seven Towers



Kachrieh Jamisi
Caps. Corbels etc.

Door Cap

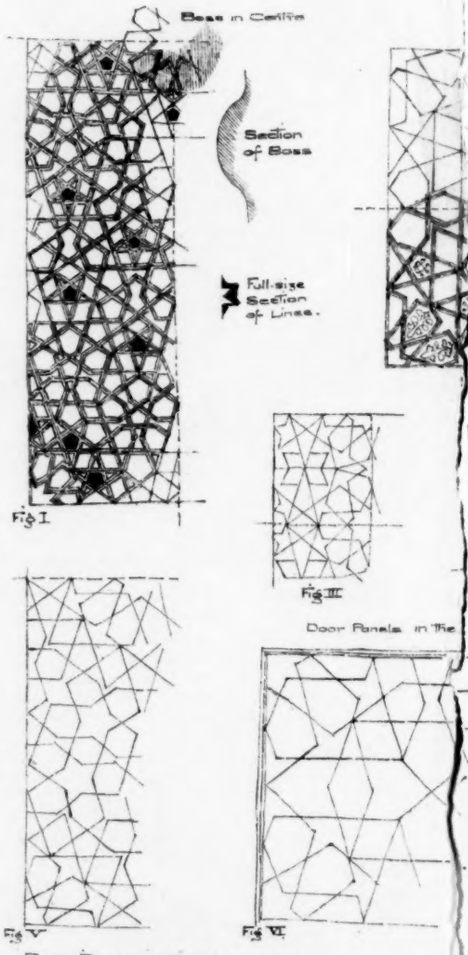
PLATE A.



CONSTANTINOPLE
Examples of
Turkish Ornament.

PLATE B

- Constantinople -



Door Panels in the Ahmedyeh.

Examples of Turkish
Geometric Patterns

PLATE F

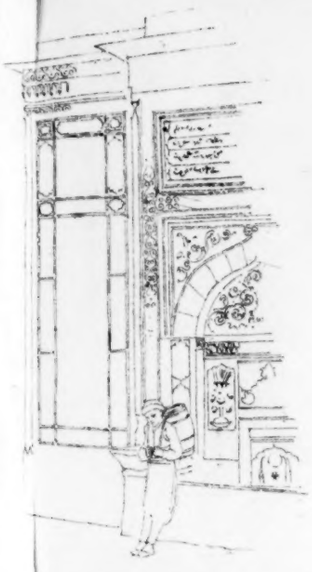


PLATE D

FOUNTAIN NEAR TOPHANE
For details see Plate C

CONSTANTINOPLE STREETS

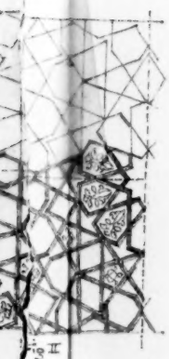


Fig II

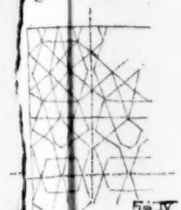


Fig IV

Sultanyeh

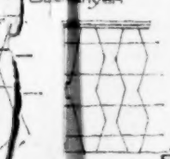


Fig VII

Jehan Mosque

of Turkish Design

Latticed Mosque Doors

PLATE C.

CONSTANTINOPLE
Examples of Turkish Ornament

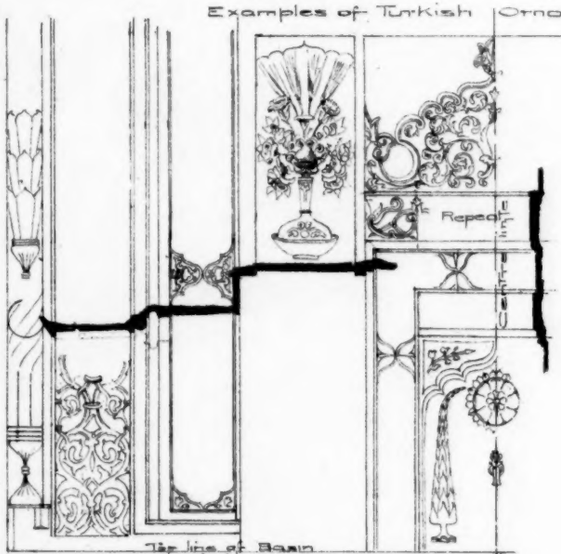


Fig I Detail upon Centre of North Side

DETAILS OF FOUNTAIN NEAR TOPHANE

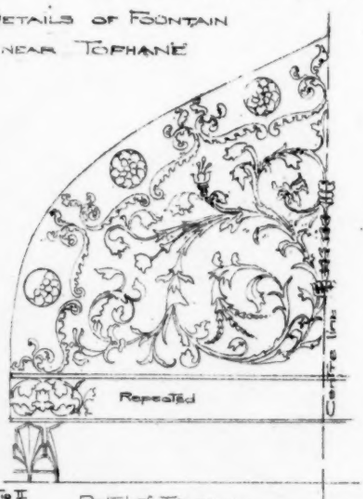


Fig II Detail of Tympanum upon South Side

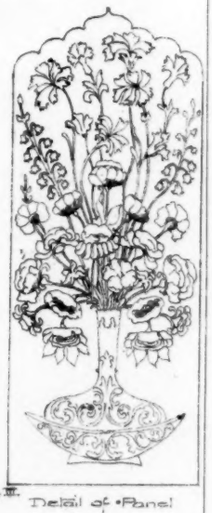
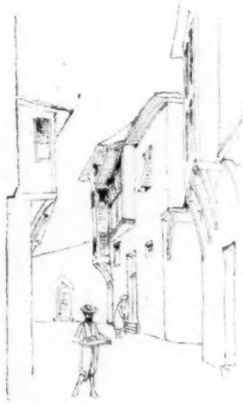


Fig III Detail of Panel



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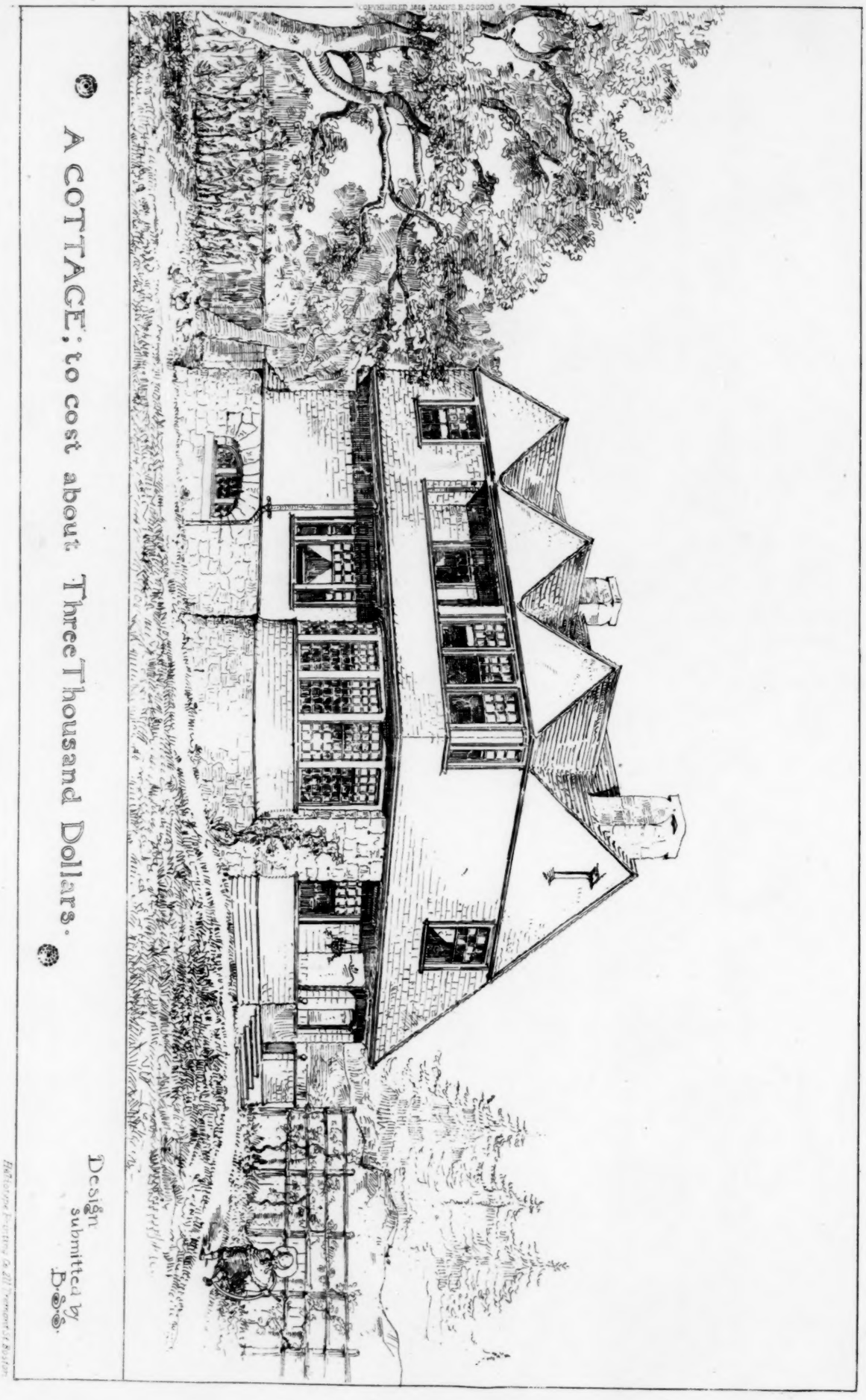

A COTTAGE; to cost about Three Thousand Dollars.

Design submitted by B. S. S.

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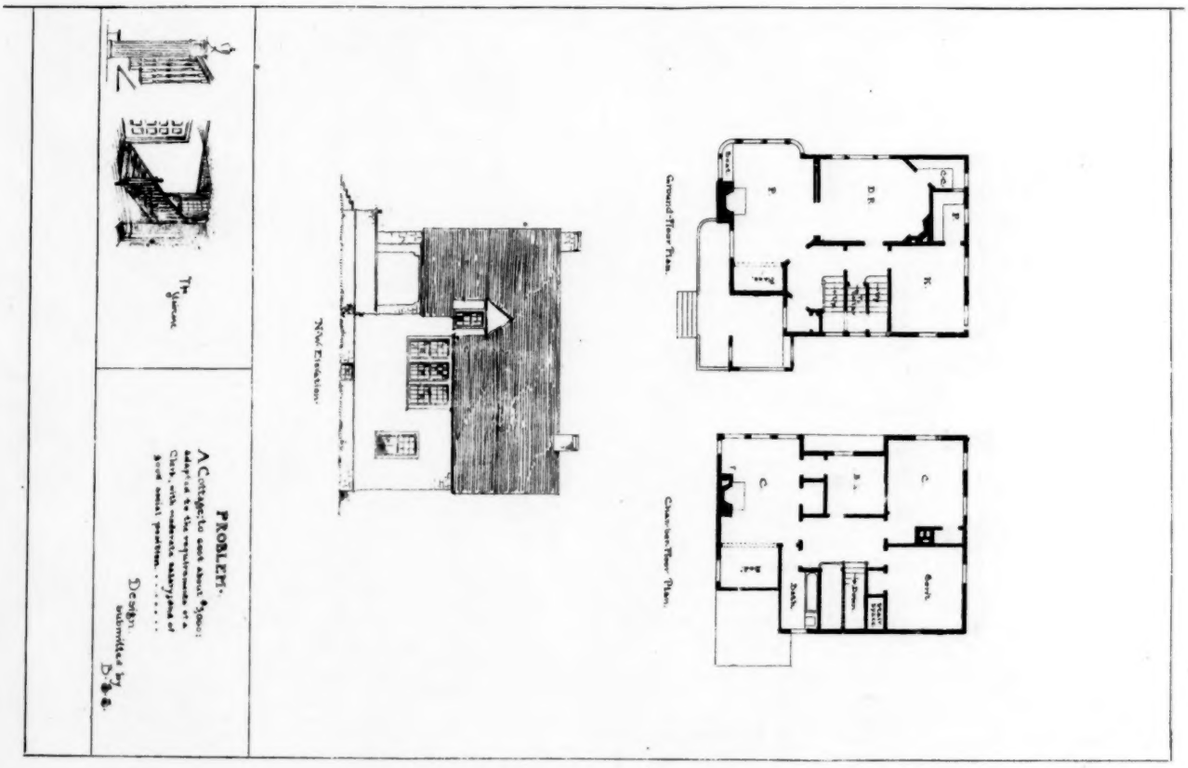


THE ILLUSTRATIONS.

CONSTANTINOPOLITAN SKETCHES, BY MR. C. HOWARD WALKER, ARCHITECT.

FOR description see the first article of this issue.

COMPETITIVE [PRIZE] DESIGN FOR A $3,000-HOUSE, SUBMITTED BY "*B. S. S.*" [MR. A. W. COBB, BOSTON, MASS.]

HOUSE FOR CHARLES MILLER, ESQ., CUMMINSVILLE, CINCINNATI, O. MR. E. ANDERSON, ARCHITECT, CINCINNATI, O.

THE $3,000-HOUSE COMPETITION. — VI.

SPECIFICATIONS of materials to be furnished and used, and labor performed by contractor, in erection and completion of dwelling, according to plans furnished by "*B. S. S.*" [A. W. Cobb, Boston, Mass.], architect.

Excavation: — Excavate for cellar 8′, gross depth, below bottom of first-floor joists.

Foundations: — Build cellar-wall and underpinning of ledge-stone laid in cement-mortar up to grade, with selected field-stone as far as possible; natural fair face outside, above grade. Special care used in selection of stone for bay and outside chimney; mortar in this work to be kept back, so that stone shall have full value.

Drains: — Excavate for and lay drains, properly trapped, to sewer.

Foundations for chimneys, etc.

Chimneys: — Common brick; fireplaces, pressed-brick.

Frame to be of sound, seasoned spruce. Sizes, sills, 6″ x 8″; floorings, 2″ x 10″, 16″ on centres; studs, 2″ x 4″, etc.

Boarding of roof, walls, and under floors, hemlock.

Sheathing paper, rosin-sized, on walls and roof.

Outside Finish: — First quality seasoned pine.

Shingles: — Best sawed cedar shingles on roof; good quality sawed cedar on walls.

Gutters: — Wood; conductors, corrugated-iron, galvanized.

Windows glazed with best double-thick German glass, set in sashes 1¾″ thick, with stout muntins; frames, hard-pine; 2-inch pine plank sills; blinds.

Top Floors: — Very best selected kiln-dried spruce, mill-planed, narrow widths; hand-planed after laying. Hard-pine floor in Kitchen; oak floor in Hall of first story; hard-pine floor in Bath-room.

Inside Finish: — Door architraves plain, 4½″ wide in Kitchen and second story; simply moulded in other rooms of first story; windows ditto; door and window finish, pine, first-quality stock.

Bath-Room: — Finish about plumber's work, cherry.

Stairs: — Run from front Hall to half-way landing, oak; 6-inch, square post at bottom; balusters, three on a tread; rest of stairs pine finish; floor of half-way landing, oak, to door of back stairway.

Doors: — 1¾″ thick pine, except doors of chamber closets, which will be 1½″ thick.

Mantels: — $50.00 allowed.

Plaster: — *Best* two-coat work.

Miscellaneous: — Pipe for gas; furnace adequate to heat five rooms and halls; $3.00 per door for hardware, counting sliding doors as two; concrete cellar-floor, and build coal-bins; use specially broad flashings at foot of valleys between gables.

Painting: — Stain shingles of roof and wall after they are on the building, and then oil two coats. Paint outside finish and blinds three coats of lead paint; inside finish to be stained and then given two coats shellac rubbed down, except in Kitchen and Servants' room which will have one coat of shellac. Hard-pine floors oiled two coats. Oak finish and floor of Hall to have four coats shellac filling rubbed down.

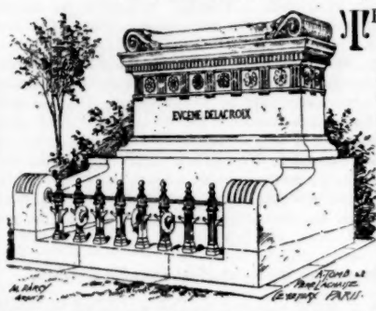
Plumbing: — Pipe of ample size and weight; soil and waste pipes carried through roof, with proper traps at sinks, etc., and air inlets; 40-gallon copper boiler; planished copper bath-tub; "Brighton" water-closet; no set bowl; hot and cold water at Kitchen sink and bath-tub.

ESTIMATE OF QUANTITIES AND PRICES RULING AT BOSTON, MASS.

200 cub. yds. excavating and drains	$55.00
50 perch built stone wall, including stone chimney	150.00
6 MM. bricks, laid, and N. E. Pressed-brick fireplaces,	130.00
8 " ft. framing lumber and partition stuff	112.00
7 " " hemlock covering-boards	98.00
2 " " top flooring	66.00
Hall, Kitchen and Piazza flooring	25.00
All finish-stock, including paper and flashings	175.00
5,400 sq. yds. lath and plaster, furring, etc.	180.00
19 doors with frames	75.00
34 windows, fitted, including cellar	200.00
40 MM. shingles	120.00
750 lbs. nails, bolts, etc.	$40.00
Stairs	100.00
Hardware for doors	60.00
Concreting cellar and building bins	60.00
Plumbing	250.00
Bell-hanging and closet-fittings,	30.00
Mantels	50.00
Furnace	150.00
Days' labor	700.00
Painting	170.00
Total	$2,996.00
Builder's profit nominal, as very often happens	0
Architect's commission, @ 5 %, (or, if working drawings only, $100.)	$150.00
Total	$3,146.00

ON THE USE OF BUILDING STONES.[1] — II.

6. *How to use Stones in the Superstructure.*



THERE are many ways of building, but whatever kind of work is adopted, whether ordinary rubble-stone, cubic stone, or ashlar, the great secret is to make every stone do its fair share. The true way of doing this is to build the walls from front to back of stone as nearly equal in thickness as possible — that is, of stones of cubic dimensions, or stones of a large area, examples of which we have in the remains of Egyptian and Cyclopean masonry. This is particularly desirable in the space between the foundation-courses, and where the face of the wall comes to be seen; good masonry is required for this, although it is often otherwise, owing perhaps to its being buried and out of sight. For the abutments of bridges or piers or viaducts, only cubic stone can be used with safety. Where a great load has to be carried, to build with cubic-stone facing and rubble-stone backing is a mistake, unless the rubble-stone is of large size and carefully bedded. With cubic stone and ordinary rubble you have in the outer face of the wall fewer beds and less mortar than in the backing, so that when the strain comes there is fracture, or a tendency for the wall to yield to the weaker side. Walls, as a rule, are much too thin to allow of the interior of a building being kept at a desirable temperature; thick walls are necessary. I would have all outer walls not less than 2 feet 6 inches, and, as applied to chimney-heads, you will never have a good draught in chimneys that are thin after passing through the roof. Unless they are thick, the current gets chilled and choked, owing to the cold, damp air it meets with from the thinness of the masonry; and, further, it leads to disfigurement, by the use of cans, cowls, and such-like contrivances, of what the architect should make one of the most telling features.

7. *How to use Stone for Coursed Work.*

The variety of this work lies more in the mode of dressing than of building. There are, for instance, hammer-dressed and nidged coursing, both done with the hammer, the difference between which has led to many disputes.

Specimens of ordinary hammer-dressed coursing may be seen on the back walls of the older buildings of the New Town, while in many of the same where modern additions have been made, nidged coursers have been used, both as different as to cost as that of ashlar and ordinary rubble-work.

There is also picked-dabbed coursing, which requires to be clearly defined, as without a specimen it may be interpreted to mean work done with the ordinary pick, which belongs to the builder; or it may mean work which can only be done by the point or pick-dabber of the hewer. But before leaving this part of my subject, I do not know that anything more valuable could be done through your Association than to have a clear and well-considered specification prepared, treating of all kinds of work. This would be certain to lessen, at least, the differences so often arising between architects and builders as to what is meant.

8. *How to Build with Ashlar-facing and Rubble Backing.*

For ordinary purposes, where there is no great load to carry, to build a substantial wall the ashlar should be well squared on the beds and joints, and laid in a good swimming bed of lime, not stones with slack beds, which the builder has to pin up to bring to the plumb, but square, well-hewn beds which will bear equally on the mortar and stones below. The builder has no excuse for not bedding them well, as with the machinery now in use, such as steam cranes and such-like appliances, he never needs to put his hand to the stone, but can at once have it lifted and rebedded without the slightest effort or trouble on his part.

A great mistake is often made in laying ashlar with too thin a bed of lime, and also jointing too closely. This may look well, but hard to hard is bad masonry, as when the pressure does come a fracture from the face is sure to follow; and I have observed buildings where the architect or clerk of works was anxious to show thin beds and close joints sadly defaced although otherwise well built, and that with the hardest of material. All ashlar-work after being backed up should have the joints well grouted with thin lime; this especially in walls that are much exposed to rain and in such a climate as ours.

The backing of ashlar, or hewn work of any kind, should be of large-sized rubble — every stone being well knocked to its bed — not simply tapped with the light hammer now in use or the edge of the trowel, but with the old-fashioned cairn hammer which every good builder had beside him on the scaffold fifty years ago.

I cannot help noticing here how different the tools which builders

[1] A Paper read at a meeting of the Edinburgh Architectural Association on the 17th ult.

now use are from what they were in the time I have referred to. Then they had a large-sized trowel with which they did not spare the mortar, and the large hammer which was freely used and never failed to bring the stone to its bed. Another tool was the hawk hammer, with one end of which the stone was squared and with the other the inequalities were dressed off. The mash and pincher, first used by the hewer forty years ago, were handy tools for bending the checks of rybats, and removing the rough along the edges of the stone. Now these, with the clourer, are part of the builder's kit, and are used by him for doing that which the older hands accomplished with the hammer — work that was not only more cheaply done, but was far more tradesmanlike in appearance. Now it is a small trowel and the lightest of hammers, which, if used, scarcely affects the stone at all. In short, the ordinary rubble building of the present day is not such as will maintain the character our Scotch masons had when I first remember.

9. *How to Dress Stone so as to get the Most Durable Surface.*

Of the various kinds of work adopted, and of which we have admirable examples in this city, I am of opinion that polished work is the best not only for securing durability to the stone, but also for bringing out the beauty of its texture and color. Hammer-dressed, nidged, pick-dabbed, broached, scabbled, droved, and tooled work all tend to bruise the surface of the stone and thus expose it to the atmosphere; while the rubbing necessary for polishing removes the bruised material, and presents to wasting agents a surface more likely to resist decay than any other kind of work I know of.

I have endeavored to make this paper as practical as possible. Its consideration may be of some value to the architectural student, as it is a matter of regret that buildings on which the architect rests his reputation, and to which his genius has been applied, should perish either from faulty stone or bad masonry.

Five hundred years ago, when those beautiful examples of Gothic architecture were erected, with their traceried windows and vaulted roofs, the architect and builder seem to have gone hand in hand not only in planning, but in building up, on true constructive principles, edifices which have withstood the ravages of time for so long a period.

Before closing, I wish to allude to a custom which prevailed when such buildings as Heriot's Hospital were erected. Then every hewer indented his mark on the face of the stone he had hewn, and it may be of interest to visit this building and observe how carefully this was adhered to. You can by these means nearly ascertain how many hewers were employed on the work, how the structure was built up round and round; and how those most expert in their craft had allotted to them the stones to dress which required the greatest skill. I have seen the same marks on buildings I have examined all over the country. I had a hobby for collecting these some years ago, and visited many of the principal cathedrals and buildings in England. I made a large collection, but unfortunately have lost the record. But it is a custom I should like to see revived, as, in my opinion, it would not deface the stone if done with the delicate and enduring touch which these old masons gave to work to which, no doubt, they attached a high value. Mark masonry, as one of the degrees in Freemasonry, had very likely something to do with the custom, but, although a Freemason myself, my paper precludes my following this phase of the craft further than to mention it as something that is at any rate suggestive.

With these examples before us, the appliances we have, and the teaching which every architectural student or working mason can get, we should be able to cope with those who have preceded us. I believe in the earnestness of the architectural student of the present day, but I am not so sure about the technical teaching or training the apprentice mason seeks after. When I first remember there were in the city many drawing-classes, chiefly attended by young men, who were either masons, carpenters, engineers, or mechanics of a like kind. There was Ruthven, on the Bridges; Milne, St. James's Square; Moffat, George Street; Paterson, Stockbridge, and others —all teaching drawing, and making good incomes from the crowded classes that attended them. Now we have such institutions as the School of Arts to take their place; but I question very much if the classes are as well attended there as the others were in the time I have referred to. Besides this, there was at every important building a drawing-class, usually conducted by the chief foreman or clerk of works, which had the effect of theoretically educating the workman to a proficiency he could not otherwise have attained. In every squad there were numbers of men who were fit, from their intelligence and training, to act as clerk of works or foreman; and, in mentioning the former, I am of opinion that the well-trained mason is better for such a trust than the joiner.

No mason or joiner can be perfect in his trade, or have his heart in it without a knowledge of drawing. As to masonry, I know of no trade that affords greater scope to the studious mind. To be proficient his head and his hands must work together. There is endless variety in the operations he has to perform, and it is far removed from work that is nearly, if not altogether, mechanical. I trust that as education (especially technical) advances, we may have a race of masons who will be something beyond mere machines, and who, by their training, will help in no small degree our architects to carry out buildings whose architecture will be worth copying even by generations to follow us.

THE WARMING AND VENTILATING OF THE ROYAL COURTS OF JUSTICE.

THE warming and ventilating of the new Courts of Justice was a subject to which the architect, the late Mr. Street, gave much thought, and it was not until several plans had been elaborated and rejected, that the existing arrangements were decided on. The scheme adopted divides the plan of the building into four nearly equal parts, by lines running at right angles through the centre of the Great Hall. To each of these is fitted a separate apparatus, the four being alike in power and construction; they are capable of working separately or together, and are arranged so as to be able to work into each other's systems. The medium employed is hot water on the low-pressure principle, circulating through pipes formed into ranges and clusters, and measuring in all a little more than eleven miles in length. The water is heated in four 50-horse-power boilers, situated in the crypt under the four angles of the Great Hall. There are two other boilers of the same dimensions for the generation of steam to be employed for the engines used for propelling air into the courts, and for heating the coils of pipes in the ventilating shafts. The scheme will thus be seen to have been arranged broadly in four divisions, all of which have been again divided into sections of high and low levels. Each section and division is connected, not with the boilers directly, but with arterial mains, which are carried round the crypt, linking the four boilers together. While the general building has been thus provided for, special attention has been bestowed upon the warming and ventilating of the courts themselves, each court being treated separately both as regards its heating and air-propelling power. Below each there is a chamber divided into two equal compartments; in one the requisite power is provided to warm and maintain the courts at a temperature of from 58° to 60° in the coldest season, with an interchange of air, equal, if necessary, to 10,000 cubic feet per minute. The other compartment is used for cold air. These two chambers merge into one, and are covered with a coarse cloth, which is used for mixing and filtering the air before it passes into the court through numerous vertical openings provided behind the wall-linings and at other convenient points. The entrance to these two compartments is under control from the lobbies of each court, so that the air driven in by fans can be passed through one or the other or partly through both, and can be tempered and mixed to suit every condition of the atmosphere. The supply of air, which in summer is calculated to reach nine and a quarter millions of cubic feet per hour, is drawn from the whole of the areas surrounding the Great Hall, and is freed from dust and smut by being passed through a fine water spray. The withdrawal of the vitiated atmosphere is accomplished by means of powerful steam coils placed in the ventilating shafts, to which access is given by numerous openings in the ceilings and galleries. Thus far the arrangements we have described have been for the purpose of warming the building. It was felt, however, that it would be necessary to cool the air in hot weather, as well as to circulate it, and for this purpose an ether refrigerating-machine has been erected in the crypt, consisting of a pair of engines, vapor-pumps, refrigerators and condenser. This machine is of sufficient power to reduce 1000 gallons of water per hour from 70° to 40° Fahr. The water thus reduced can be converted to fine spray by an "atomiser," and the air passed through it. The cold water, that is not absorbed, is collected in a cistern, and conveyed to the condenser, where it is used to abstract the heat given off by the ether in liquefying, and is finally allowed to escape at a temperature of 90°. A recording thermometer is attached to the inlet and outlet pipes of the cooler, so that the temperature of the service-water to the sprays can be adjusted to a nicety. The works have been executed by Messrs. Haden and Sons, of Trowbridge, and carried out under the supervision of Mr. Frederick Blake, of Manchester, who assisted the late Mr. Street in working out the scheme.— *Engineering.*

An Old Church in Arizona.— The most interesting of all sights is the grand old mission church of San Xavier, nine miles from Tucson, on the Papago reservation. This mission was founded in 1654, when the Papago (or Pima) Indians were supposed to have accepted the Christian religion. The church of San Xavier was begun about the year 1700 and finished in 1798, excepting one of the towers, which is yet unfinished. The style of architecture is Moorish. The lines are wonderfully perfect. It is in the form of a cross, 70 by 115 feet, and has a well formed dome. A balustrade surmounts all the walls. The front is covered with scroll-work, intricate, interesting, and partly decayed. Over the front is a life-size bust of St. Xavier. The interior is literally covered with frescoes. The altar is adorned with gilded scroll-work. The statues are as numerous as the paintings. The tiling on the floor is much defaced and but little is left. That of the roof is nearly all as perfect as when laid. Its manufacture is one of the lost arts. There is a chime of four good-sized bells in the tower that have a soft, sweet sound. Ascending to the roof, you walk up long, narrow stairs in solid walls. But one can go at a time. The same is true in going to the gallery of the church. It is marvelous that so long ago, and in such a place, such architecture, ornaments, painting, and sculpture were so well executed. You are admitted by two of the Papago signiors, who have it in charge. The admittance fee is 50 cents for each person.— *Denver Tribune.*

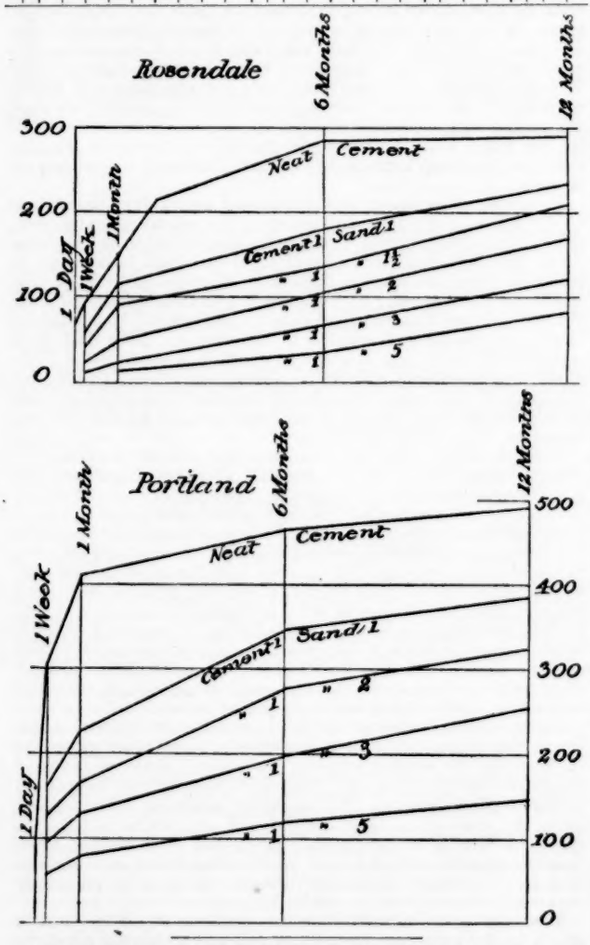
CEMENT TESTING.

In the paper on "Cement Testing," in our issue for February 3, the following tabular statement should have been published together with the diagrams: —

CITY OF BOSTON. — IMPROVED SEWERAGE.

Average tensile strength in lbs. per square inch of Rosendale and Portland cement mortars.
Breaking section = 2¼ square inches.
Briquettes were immersed in water as soon as they would bear handling.
Sand was medium-coarse beach sand.
Fineness indicates per cent of particles retained by Nos. 50 and 120 sieves.
Nos. 50 and 120 sieves have respectively 50 and 120 meshes to a lineal inch, and 2,500 and 14,400 meshes to the square inch.
Averages are obtained from about 25,000 separate breakings in 1878-82.
Proportions were by measure, packed as in actual work.
Mortars were rammed in moulds.

	Fineness.	Neat.					Cement 1. Sand 1.					Cement 1. Sand 1½.					Cement 1. Sand 2.					Cement 1. Sand 3.					Cement 1. Sand 5.				
	No. 50. No. 120.	One Day.	One Week.	One Month.	Six Months.	Twelve Months.	One Week.	One Month.	Six Months.	Twelve Months.		One Week.	One Month.	Six Months.	Twelve Months.		One Week.	One Month.	Six Months.	Twelve Months.		One Week.	One Month.	Six Months.	Twelve Months.		One Week.	One Month.	Six Months.	Twelve Months.	
ROSENDALE.																														
	7.3	29	71	92	148	282	290	56	116	180	236	41	90	135	210	22	49	105	169	12	25	65	121		10	36	80			
PORTLAND.																														
	10	30	102	303	412	468	494	160	225	347	387					126	163	279	323	95	130	198	257	55	78	116	145			



A Costly Blunder.— W. D. McAdoo kept a hotel in Greensborough, N. C., and ordered a pane of plate-glass from New York 22 x 32 inches. Mr. McAdoo wrote "feet" when he should have written "inches," and the New York firm was obliged to import the glass from France. The enormous pane, one inch thick and 22 feet wide by 32 feet long, now lies on the wharf at Norfolk, and even if Mr. McAdoo needed it, there is no way of transporting it, as it would not pass through the cuts along the railroads nor the covered bridges. It cost $3,100.— *Exchange.*

THE OWNERSHIP OF ARCHITECTS' DRAWINGS.

THE question is evidently an unsettled one with architects how far their drawings belong, or ought to belong, to themselves. It is constantly cropping up as a grievance that the courts of law have theoretically awarded the ownership to their clients, and the decision is declared to be so unjust in practice that every available means ought to be taken to counteract its operation. As matter of fact, there is not one case in a hundred, perhaps in a thousand, in which the architect is deprived of a single scrap of his paper, either double-elephant or foolscap. On the contrary, we could quote instances in which the client has expressly refused to take the plans when offered to be delivered up to him; and we are disposed to regard these as being representative of the true public feeling. Not only so, but we are inclined to think the courts of law have really never given the decision they are supposed to have given; so that a few words of explanation may suffice to relieve the architectural mind from many misgivings.

The quarrel, it will be remembered, by which the judgment of the courts was chiefly brought out, was one which had arisen between the late Mr. Edward Barry and the Office of Public Works and Buildings, regarding the Houses of Parliament. The circumstances are worthy of being recalled in a little detail, as it will turn out that the peculiarities of the case make it altogether exceptional. The architect of the great edifice in question was, as everybody knows, Sir Charles Barry. Now there is in the English system of public administration a certain unwritten principle whereby the creator of any sufficiently important national enterprise is permitted, so long as he lives, to be its director. Witness, Sir Henry Cole, at South Kensington, who was retained in office, in spite of a whole world in arms, as the *chef de bureau* of the department he had originated, until his voluntary retirement in old age with a pension and a title. At any rate, Sir Charles Barry was no doubt regarded by the Government as the permanent surveyor of his Palace of Westminster; and, had he survived till to-day, it is scarcely possible that his command of the building operations would have been interfered with. Sir Christopher Wren, by the by, was ousted from the control of St. Paul's Cathedral; but it was probably because of a refusal to recognize the failure of his powers at an exceedingly advanced age; and, after all, the dismissal was loudly denounced as a shabby act. Sir Charles Barry, however, died at a little over sixty; and it was found that, in order to provide for his son, he had bequeathed to him in a mass the drawings of the Houses of Parliament, the possession of which would, he supposed, entitle him to the surveyorship of the building. Accordingly, young Mr. Barry entered upon the duties which his father had been accustomed to perform, and his title was in effect fully recognized by the Government. But the time came when disagreements arose, through incompatibilities of temperament if nothing more, and the Treasury was officially moved to question this title. Eventually Mr. Barry was informed that the Department of Public Works would take his duties for the future, and he was requested, therefore, to send the drawings of the building to the departmental offices for that purpose. He refused; an architect's drawings, he said, were the architect's property, and the building alone was the client's. Now if the building in question had been of an ordinary size and character, the chances are that the officials would have taken no further trouble in the matter; but the area covered by the Houses of Parliament was so large, and the intricacies of the scientific arrangement so perplexing, that the surveyors could not find their way, and consequently the Government had to apply to the ingenuity of the lawyers for assistance. The lawyers soon discovered the ground that was necessary to take up. If the architect, they said, were permitted to keep the plans of a building in these circumstances, how could his employer get at the drains? To keep the plans from him could only be intended to embarrass him intentionally in this and other similar respects; and these documents, in fact, were obviously to be regarded as the mere records or books of certain transactions of business, which an agent had in charge for his employer and must deliver up when called upon. To this argument, which any one who understands building affairs must see was a false issue — for it turned entirely upon the supposition that every drawing produced by an architect must be the record of some secret of construction — the professional leaders unfortunately made an equally fallacious rejoinder. The plans, they said, were the architect's "implements of trade," and nothing more; overlooking the fact that implements of trade are used in one piece of work after another, whereas plans are only used in one. However, the illustration of the drains bore down all opposition; parliamentary debaters and political leading-article writers denounced the selfish trickery of an order of men who laid-in people's drains, and then traded upon the concealment of them; advanced thinkers discovered that more important things than even the drains of the public were in danger, namely, their chimney-flues; and at last shrewd old judges chuckled with laughter at the joke, as they declared it to be almost as plain as the nose on a man's face that the plans of his house were as much his property as the boots on his

feet or the nails on his fingers. When lawyers laugh at their own wit it is a pretty sure sign that their logic is loose; but it can scarcely be denied that in the particular case in hand the enforced surrender of Mr. Barry's plans was an act of substantial justice. The vital peculiarity of the case of the Houses of Parliament, however, was that the plans could not be dispensed with by the officials who were to take charge of a building of such magnitude and intricacy.

But the point of law which was really decided was manifestly no more than this — that an agent must deliver up the indispensable records of his agency; whereas the fact is that the ordinary plans of an architect are not in any way such indispensable records. As regards, for example, the drains, the fallacy is so palpably absurd that it could scarcely be equalled except by quoting the chimney-flues. In most cases, perhaps, the plan of drains originally laid down has been materially modified in execution, and in no case whatever can it be said that the chimney-sweep has the slightest need for the directions of an architect's drawings. When an architect would retain plans in his hands, and refuse to allow them to be copied, for the obvious purpose of preventing another architect, who has been called in as his successor, from understanding the construction of the building, we may say at once that such an artifice is unjustifiable; but, on the other hand, to pretend that there is any practical necessity, as a general rule, for depriving a designer of the custody of those drawings of his design which have ceased to be of any value except to himself sentimentally, is equally wrong.

So far as we can judge from the precise form in which the continued protests of architects against the supposed decision of the courts are expressed, we seem to be justified in concluding that the true grievance rests upon the idea that plans which are given up to a client may be used or abused by some one else. This is a weak fancy at the best, but the influence of it may be easily understood. Indeed, it may be stated as a point of professional etiquette that a man's drawings are to be held sacred by all other men, even if only as a concession to the author's self-esteem. So far we have no doubt the courts of law would be found to support the case of the architects to the full against clients who could be proved to be animated by ungenerous motives, or even by too great a disregard of considerate and friendly feeling; but further than this it would be dangerous to go. At the same time, we submit that in ninety-nine cases out of a hundred the client cannot possibly have any reason for demanding more than a correct record of the construction of his building for practical reference; and this, it is well known, is not identical with the surrender of the drawings. A plan of the drainage, for instance, ought unquestionably to be supplied in every case of any importance; so also plans and sections of the building generally may be fairly called for, to be "put away with the papers." We ought rather to say it is *corrected copies* that ought to be supplied. But what architect would refuse these? The only question worth asking is whether the trouble of making them ought or ought not to be specially paid for? Again, the whole of the drawings ought to be held subject to a right of examination at any time by any person justly entitled to refer to them; but what architect would refuse this? On the whole, the rights and wrongs of the case are pretty well indicated by the common-sense custom, which may be called invariable, exceptions only proving the rule — namely that the architect is the custodian of his plans, and that the employer is entitled to all copies and all information he may require. And if this is common sense, it is common law. — *The Architect.*

THE YELLOWSTONE NATIONAL PARK.

Omaha, Neb., February 12, 1883.

To the Editors of the American Architect: —

Dear Sirs, — Referring to your article in No. 371 of the *American Architect*, relating to what is known as the National Park Scheme, would you permit an architect who has, by frequent visits, become familiar among the grand scenes of the Rocky Mountains and adjacent territory, and especially the section known as the Yellowstone National Park, to give an opinion, with a reason, why no portion of the Park other than that required for buildings should be allowed to be held by any individual or corporation under an exclusive privilege, and that no railroad should ever be allowed to lay its rails within the Park limits?

The comparatively few who have visited this wonderland are universal in the jealous opinion that the entire area at present held under reservation (and to which should be added on the east a strip of thirty miles in width) should forever remain a free and unincumbered pleasure-ground uncontaminated by corporate or individual monopoly. Over an area of some four thousand square miles are scattered the grandest array of astonishing sights the world can produce.

A proper understanding of what a visitor to this section requires in order to enjoy the freedom of this grand pleasure-ground with the greatest comfort, can be easiest explained by a description of a route necessary to see its main features. Allowing that the railroad should reach and terminate on the west at or near Henry's Lake and the Targee Pass, where proper outfitting posts and hotels should be located, a short ride from here along the Madison Valley and over the mountains, fourteen miles, we reach the Fire-Hole Basin, where is now located Marshall's National Park Hotel and outfitting-post, and where suddenly opens to view a basin having an area of some seven square miles. Here should be located good hotels and outfitting-posts. From Fire-Hole Basin along the east fork of the Fire-Hole River, past Mary's Lake, Alum Creek, etc., to Yellowstone Lake, thirty-two miles, from Fire-Hole Basin to Middle Geyser Basin, four miles, and to the Upper Geyser Basin an additional eight miles, where a hotel should be located. From here to Shoshone Lake twelve miles, where a hotel should be located. From here to Yellowstone Lake *via* the Natural Bridge, fifteen miles. Following the shores of the lake twelve miles, along which hotel accommodations should be found, down the Yellowstone River past the Mud Pots, Sulphur Mountain, etc., to the Upper Falls, seventeen miles, and on to the Grotto and Falls, to the Lower Falls, one mile, in the vicinity of which hotel accommodations should be found.

Following the Grand Canyon and on to Tower Falls, Fossil Forest, Soda Butte, Specimen Mountain, etc., crossing the Yellowstone on Barnoett's Bridge, and back by Mt. Washburn to Mammoth Hot Springs, a distance, as travelled from the Lower Falls, of eighty miles, along which distance hotel accommodations should be found at least every twenty miles. At the Mammoth Hot Springs should be good hotel and outfitting accommodations, from here to Beaver Lake and Obsidian Mountain, fourteen miles, and on to Norris Geyser Basin, twelve miles, where should be located hotel accommodations, and on to Gibbon Falls, eight miles, and return to Fire-Hole Basin, ten miles. All along this route detours amounting to at least two hundred miles to see the objects of interest not on the line of travel, should be made. In granting these hotel privileges none should be exclusive and in no case should more land be leased than is required for buildings. The leasing of large tracts would effectually shut out the visitor who should travel with his own or hired conveyance from seeing these natural wonders, unless he should pay the price demanded.

At each place of interest the tourist finds good water and grass for his horses, fine camping grounds with every facility at hand necessary for comfort. In almost every case these camps are made along beautiful streams on grassy meadows with clusters of pine, firs, etc., near at hand.

Some large tracts of timber have been burned off, notably east of Fire Hole on the Madison, and between Obsidian Cliff and the Mammoth Hot Springs. The season at which these fires occur, and their location, makes it easy to detect the cause, and prescribe the cure. Should all railroad survey-parties and professional hunters be debarred from entering the Park limits, forest fires would become unknown. The tourists' camp-fire is made at a season when it would be indeed difficult to create a forest fire; the short grass with which so much of this section is covered will effectually check the camp-fire blaze during the visiting season, which is very short, not exceeding four months, and but few nights pass that are free from frost, as the ice on our camp kettle during the entire month of August demonstrated.

From close observation, having measured nearly all of the craters of the Spouting Geysers, and measured the volume of water, etc., thrown from them, I know there are no obstructions in any of them. At the Norris Geyser basin I found one spouter had in its crater a pine limb some two inches in diameter. After seeing the force with which the water, steam, and rocks are thrown from these geysers no one would believe that with the means at hand it would be possible to choke or check the force exhibited. After seeing Hell's Half Acre make one of its periodical throws, or standing in the National Park Hotel, four miles away, and feeling a heavy log building vibrate, the ingenuity of man cannot conceive of a method that would prevent these outbursts, or of a crust of sufficient strength to withhold the pressure.

What the visitor to the Park needs is several good hotels and supply-stations located somewhat as suggested. These privileges should be given to any responsible party coming well recommended, and should not in any event be controlled by a single individual or corporation, and all should be under the control of the Park Superintendent. The claim that a large and wealthy corporation could best preserve the Park from vandalism is not well taken; the time is not far distant when this pleasure-ground will be the great resort of all who can afford to visit it, and the first great aim of those in whom is invested the authority, should be to so arrange all agreements with all who are permitted to erect hotels and supply-stations, that good accommodations could be had at a fair charge, with every reasonable safeguard thrown around these franchises, that would always secure free access to all the territory within the Park limits to every proper person.

An exclusive privilege of land in any considerable quantity, much less in area than is asked for in this scheme, would place tourists at the mercy of the syndicate having the control; many of the most wonderful features of interest could not be seen without trespassing on this forbidden ground. Private parties could not procure water, grass, etc., near where their camp should be made, should such a system of leasing be permitted. The object of wishing so much land in connection with the hotel privilege can be for no other purpose than to compel visitors to patronize them, or be effectually shut out from seeing the best of its features.

That the profit on such exclusive privileges would be great is shown by the exceeding earnestness with which they are sought to be obtained.

No comment can be too unreasonable, or no criticism too plain that will retain unobstructed by monopoly privilege the Yellowstone National Park a free pleasure-ground for all time to all the world.

The running of the cars within the Park limits would detract much more from its interest as a pleasure-ground, and be much more out of place than the running of the street cars or elevated-railroad

cars into the New York Central Park, or Boston Common, or any other exclusive pleasure-ground.

The present expense and facilities for obtaining supplies we found as follows: Good outfits and provisions can be procured at Boseman, Virginia City, Dillon, Beaver Canyon, etc., also within the Park limits, at Mammoth Hot Springs and at Fire Hole Basin, the total expense for saddle-horses, spring-wagons, guide, tents, provisions, cook and cooking utensils, was five dollars and fifty cents, each, a day for a party of nine. All of the roads entering the Park, as well as those within its limits, are good; at places passing over high mountains, through beautiful parks, meadows, canyons, etc., along and across fine streams. No better or more healthful method of transportation than we found on every hand at our service could be desired. Should the railroads be allowed to pass no nearer than Henry Lake on the west, Boseman Canyon on the north, and similar locations east and south, with strict game laws to prevent professional hunters from slaughtering the game, a few trusty men under the control of the Park Superintendent would ensure to the public a model resort for pleasure at small expense. Other than building the necessary roads, bridges, etc., within the Park to obtain easy access to the points of interest, no attempt at works of art need be attempted to make a visit one of exceeding interest. Nature here has not only designed, but fully developed a grandeur that no hand of man can improve. Respectfully yours, CHARLES F. DRISCOLL.

CEMENT. — MARBLE.

March 7, 1883.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Dear Sirs,— Which is preferable, cĕm'-ent or ce-mĕnt'? The dictionaries incline to the former pronunciation, but the latter is more commonly used among architects and builders.

And please inform me as to the comparative durability of Italian monumental marble and that from Vermont, notably the Middlebury white marble, when used for tombstones in the vicinity of Boston.

Yours, M. F.

[CEM'-ENT is no doubt correct, but as in many similar cases, the verbal form, accented on the last syllable, generally takes the place of the noun.

The durability of Vermont marble varies extremely with the quarry. We do not know particularly about the Middlebury sort, and doubt if it has been used long enough in tombstones to give much indication of its value for such purposes. — EDS. AMERICAN ARCHITECT.]

SUBSURFACE IRRIGATION.

MINNEAPOLIS, March 8, 1883.

TO THE EDITORS OF THE AMERICAN ARCHITECT: —

Gentlemen, — In the system of disposal of sewage by subsoil irrigation, what is done in winter where the climate is such as to freeze the earth from three feet to six feet? If anything has ever been proposed to meet such a case in the *American Architect*, or by the authorities who treat of the subject it has never come to my observation, and I presume a reply in your paper will be of value to many as well as to A SUBSCRIBER.

[WE have never known the action of subsurface irrigation pipes, placed ten or twelve inches beneath the surface, to be interfered with by frost. In our own experience, which is confirmed by that of others, the pipes continue to dispose perfectly of the liquid discharged through them even when the ground is frozen four or five feet deep all around them. — EDS. AMERICAN ARCHITECT.]

NOTES AND CLIPPINGS.

THE CONSTRUCTION OF THEATRES. — At a meeting of the Civil and Mechanical Engineers' Society held last evening, a paper was read by Mr. A. W. Tanner "On the Construction of Theatres." The great points to bear in mind in planning a theatre were, Mr. Tanner said, to transfer all operations possible in the working of a theatre to a separate building of fire-proof construction throughout, having solid division walls between the various parts of the building; convenience of access, an extra exit door to every entrance and contiguous to it; all doors to open outward; the exit doorways to be the greatest width of the whole passage; absence of steps in corridors; the use of inclined gradients of one in ten in preference; hand-rails three inches from walls; no corridor or staircase less than four feet six inches wide; an additional six inches for every hundred persons to be accommodated; increase of width of corridors, when other passages met them, by the width of each added passage; protection of structural iron-work; no workshops either above or below the auditorium; three-foot passages at the back of all the circles; separate and distinct entrances and exits from the various parts of the house, and a proportional area of 250 square feet for every 100 persons throughout the lobbies, passages, and landings. One Continental country required a provision of two exits for 300 persons, and three for 500. There should be strong wooden barriers in all spacious corridors, breaking up a possible crush, and separating the people into fifties; and strong divisions in all staircases six feet wide and over. In the form of a theatre he was in favor of the auditorium being in the shape of an ellipse, with its major axis at right angles to the stage. He would have the boxes as few in number as possible, and confined to a small space in the auditorium. The pit-goers he would accommodate in the upper parts of the house, and devote the floors to the stalls, the first circle round the same being slightly raised above the last row of stalls, and the circles constructed on cantilevers without columns. Such a house would have a light and agreeable appearance, and, he thought, would successfully meet the requirements of the present day. — *Pall Mall Gazette.*

THE ORIGINAL INVENTOR OF THE STORAGE BATTERY. — Electricians are interested at present in the discovery, in the Patent-office, of a patent issued February 26, 1861, to C. Kirchof, a New Yorker, for an electric battery which presents all the features of the storage batteries in use at the present day — lead plates immersed in acidulated water, which become coated with oxide of lead. The principle appears to be the same as that of the Planté (French) storage battery, and the storage batteries now in the market must hereafter rely upon peculiarities of construction instead of comprehensive claims. — *New York Evening Post.*

FRENCH MODESTY. — Few readers of the French journals of the scientific sort will fail to carry away a profound conviction of the modesty of the scientists across the English Channel. The gas managers of France are proposing to erect a statue to Philippe Lebon as "the inventor of gas-lighting." Already statues have been set up to Frédéric Sauvage, "the inventor of the screw-propeller," and to the Marquis Claude de Jouffroy as "the inventor of steam navigation." M. Marc Seguin is called in France "the inventor of the high-speed locomotive," and a M. Martin "the inventor of the air-brake." One of these days it will be discovered that the architect who planned out the ark for Noah was a Frenchman. — *Exchange,*

A CHICAGO MODEL PACKING HOUSE. — A packing firm recently located in Chicago, have lately completed a warehouse which has a capacity of 100,000 tierces, and in safety, strength and fire-proof properties is regarded as the most perfect packing storage-house and warehouse on the American Continent. This superb building has walls of two feet uniform thickness, a height of five stories, each floor having a sustaining power of many millions of pounds. It is divided by a massive fire-proof wall into two warehouses, "A" and "B," is equipped with three large elevators, and has a most perfect system of fire protection and fire resistance, including a permanent sheet of water eight inches in depth covering the area of the roof. — *The Spectator.*

CAST-IRON AND WROUGHT-IRON EXPOSED TO SEWAGE. — Town sewage, that is, waste-water and human excreta, does not act injuriously on iron. In the manufacturing districts of Lancashire and Yorkshire, sewage is even most extensively used for steam-boiler purposes, the boilers, however, having special arrangements for blowing out mud. Sewage does not fur the boilers, and is consequently preferred to clean but hard water. Sewage contains solutions of soap, oil, and fatty matters, which tend to protect iron. Cast-iron pipes may be jointed with Portland cement in place of lead, making, in fact, the strongest joint known. At Chatsworth, the cast-iron pipes for the Emperor Fountain are jointed with Portland cement. — *C. B. in the Journal of the Society of Arts.*

THE FORGOTTEN TUNNEL. — Mr. Aurelien Scholl has an amusing note on what he calls the "forgotten tunnel." The other Sunday, being at Brussels, he was struck by the extreme thinness of the earth covering the Braine le Comte tunnel, and wondered why the common sense of the engineers who made the line did not direct them to continue the cutting, and thus avoid a subterranean passage. The mystery was explained to him by a Mons advocate. When railways were in their veriest infancy the Belgian government sent a party of engineers over to England to acquire experience in the construction of the new iron highways, and on their return they were instructed to lay out the first railway in that enterprising little kingdom. The work was accordingly put in hand, but on its completion one of the engineers exclaimed: "Good heavens, we have forgotten the tunnel!" The consternation was general, especially when it was remembered that there was not a single line in England but could boast of a tunnel. What was to be done? Nothing but to construct the long corridor at Braine le Comte, and when it was finished the earth was put on the top. The tunnel was then, says the witty Aurelien, the glory of the line. — *Wood and Iron.*

HOW IRON FILINGS PREVENT THE USE OF THE ELECTRIC LIGHT. — A case wherein the electric light and small particles of iron and steel are the central figures of attraction has lately come to light in this city. A manufacturer who employs a large number of emery wheels in his works concluded that he ought to have an electric light, and the light was accordingly put in. To his great disappointment he found that it would not work, and as an explanation for its queer conduct, was informed that the light was all right, but the atmosphere of the shop was all wrong — there were too many iron and steel filings "a flying in the air." After several ineffectual efforts to make the light perform its functions properly, it was suggested that the generator might be "boxed" and the obnoxious filings kept at a distance. This plan was tried, but without favorable results. The generator got hot, and petitioned very forcibly and effectually for a few whiffs of fresh air. This ended the struggle and the light was taken out. The real cause of the light's failure, as we have intimated, was not due to any imperfections of its own, as it is now working satisfactorily at another shop, but is ascribable to the large amount of iron and steel filings and dust in the air of the shop in which it was so fruitlessly experimented with. The rapid travel of the armature of the generator created a suction in the air, and this, added to the magnetism of the field magnets, naturally drew all iron filings floating in the air toward and into the machine. These small particles, attaching themselves to the armature strips, were brought in contact with the electric sparks of the machine and heated sufficiently to burn out the sections of the armature. The loss of one section, of course, breaks the circuit and puts an end to further operation. Several sections were burned out in the experiments to which we allude and the folly of persisting fully demonstrated. The question now is, can the electric light be successfully employed in close proximity to emery wheels? — *Age of Steel.*

BUILDING INTELLIGENCE.

(Reported for The American Architect and Building News.)

[*Although a large portion of the building intelligence is provided by their regular correspondents, the editors greatly desire to receive voluntary information, especially from the smaller and outlying towns.*]

BUILDING PATENTS.

[*Printed specifications of any patents here mentioned, together with full detail illustrations, may be obtained of the Commissioner of Patents, at Washington, for twenty-five cents.*]

273,247. Skylight. — Adam Bickelhoupt and Geo. Bickelhoupt, New York, N. Y.

273,248. Skylight. — Adam Bickelhoupt and Geo. Bickelhoupt, New York, N. Y.

273,257. Sidewalk-Light. — Edward K. Chamberlin, Cleveland, O.

273,265. Automatic Shutter-Fastener. — Thos. J. Dotts, Reading, Pa.

273,273. Elevator. — John Greenwood, Rochester, N. Y.

273,303. Wood-Polishing Machine. — James L. Perry, Berlin, Wis.

273,323. Protecting Elevator-Shafts and their Hatchways. — D. Wheeler Swift and Henry D. Swift, Worcester, Mass.

273,327. Sash-Holder. — Samuel S. Waterhouse, Pleasantville, N. J.

273,354. Brick-Kiln. — Jno. E. Gamble, East Liverpool, Ohio.

273,355. Window Sash and Frame. — Jacob Gruninger, San Francisco, Cal.

273,385. Nail. — George H. Perkins, Philadelphia, Pa.

273,386. Fire-Escape Ladder. — Samuel J. Phreaner, Philadelphia, Pa.

273,413. Door-Latch. — William E. Sparks, New Britain, Conn.

273,419. Fire-Proof Arch and Ceiling. — Peter B. Wight, Chicago, Ill.

273,439. Privy and its Attachments. — Francis Bauer and Daniel T. Kenney, Baltimore, Md.

273,440. Carpenter's Gauge. — Wilbur F. Berry, Chicago, Ill.

273,461. Wrench. — Joseph W. Calef, North Easton, Mass.

273,499. Ash-Chute. — George A. Fisher, New York, N. Y.

273,556. Fire-Proof Structure. — Samuel Liddle, Hamilton, Nev.

273,589. Combined Chimney Ventilator and Heater. — Frank E. Ormsby, Naumburg, N. Y.

273,622. Electrical Door-Opener. — Adolph T. Smith, New York, N. Y.

273,650. Shingle-Machine. — Calvin J. Weld, Brattleborough, Vt.

273,668. Water-Closet Pan. — Patrick Connolly, Brooklyn, N. Y.

273,685. Door-Knob. — Rolin D. Huntley, Havana, N. Y.

273,687-689. Non-Conducting Covering. — Geo. Kelly, Chicago, Ill.

SUMMARY OF THE WEEK.

Baltimore.

Insurance-Building. — Mr. Chas. L. Carson, architect, is preparing drawings for the Firemen's Insurance Co., for a five-st'y and mansard building on the n e cor. of South and Second Sts. It is to be of brick, with stone and terra-cotta finish, 37′ x 64′, and cost $90,000.

Building Permits. — Since our last report twenty-nine permits have been granted, the more important of which are the following: —

Chris. F. Richter, 9 three-st'y brick buildings, w s Mount St., n w cor. Lorman St.; also, 5 two-st'y brick buildings, n s Lorman St., between Mount and Fulton Sts.; also, 4 two-st'y brick buildings, e s Bruce Alley, n of Lorman St.

Geo. W. Moke, 20 two-st'y brick buildings, e s Bruce Alley, between Saratoga and Mulberry Sts.

John Glenn, 10 three-st'y brick buildings, w s Carey St., n w cor. Mulberry St.

B. Thielman, 2 two-st'y brick buildings, e s Belair Ave., s of North Ave.

Jos. M. Cone, 20 three-st'y brick buildings, s s Harlem Ave., between Arlington Ave. and Schroeder St.; also, 22 three-st'y brick buildings, n s Edmondson Ave., between Arlington Ave. and Schroeder St.; also, 7 two-st'y brick buildings, e s Mount St., s of Edmondson Ave.

Rev. James Holden, three-st'y brick building, s s Chase St., s of Hillman St.

Charles Duncan, 3 two-st'y brick buildings, n s Columbia Ave., between Callender Alley and Scott St.

John Disney, two-st'y brick building, s e cor. Aisquith and Hoffman Sts.

Geo. C. Hershman, three-st'y brick building, e s Ann St., between Bank and Gough Sts.

B. F. Smith, 6 two-st'y brick buildings, e s Hubert St., between Clement St. and Fort Ave.

Jos. Turner, 7 three-st'y brick buildings, e s Madison Ave., between Laurens and Robert Sts.

M. E. Wise, two-st'y brick building, in rear of s e cor. Lexington and Liberty Sts.

Thos. F. M. Hugh, two-st'y brick building, s e cor. Warren and Henry Sts.

Boston.

Building Permits. — *Brick. — Cazenove St., No.* 17, Ward 11, for Maria M. Brown, five-st'y flat Hotel "Le Brun," 33′ x 63′; Holmes Brothers, builders.

Marlborough St., No. 183, Ward 11, for F. W. Chandler, four-st'y flat dwell., 24′ x 62′; M. C. Grant, builder.

Conant St., Ward 20, for James McCormick, four-st'y flat brewery, 69′ and 71′ x 40′; ell, 31′ x 39′; James W. Denry, builder.

Harrison Ave., extension Hayward and Chickering Places, Ward 10, for Geo. W. Thym, four-st'y flat dwell. and stores, 22′ x 60′ 11″: J. W. Coburn & Co., builders.

Bennett St., No. 15, *and Ash St., Nos.* 2 to 6, Ward 12, for Boston Dispensary, two-st'y pitch Charitable Institution, 65′ 4″ x 65′ 8″; McKenzie & Campbell, builders.

Pleasant St., cor. South St., Ward 24, for Boston Gas Light Co., two-st'y pitch exhausting-house, 38′ x 160′; two-st'y pitch purifying-house, 71′ x 156′; ell, 30′ x 87′; two-st'y pitch retort-house, 108′ x 197′ 8″; two-st'y pitch meter-house, 50′ x 62′; Thomas F. Rowland, builder.

South St., No. 22, *and Linwood Pl., Nos.* 1 to 4, Ward 12, for W. Rice, six-st'y flat mercantile, 24′ 4″ x 84′, and 22′ x 76′; L. P. Soule, builder.

Village St., Nos. 48′ to 50′, cor. Lucas St., Ward 16, three-st'y flat veterinary establishment, 48′ x 48′.

Wood. — Mechanic Place, near Mechanic Ave., Ward 25, for J. Frank Wadleigh, one-st'y pitch stable, 30′ x 42.

Clifton Court, near N. E. R. R., Ward 20, for A. D. Gould, two-st'y hip dwell., 30′ x 34′.

Brookside Ave., near Green St., Ward 23, for Joseph P. Shaw, one-st'y flat building for manufacturing purposes, 20′ x 60′; Joseph P. Shaw, builder.

Evans St., near Stanton Ave., Ward 24, for Walter E. Wyman, two-st'y pitch dwell., 28′ x 36′.

Berkeley Place, near Dudley St., Ward 20, for W. T. Hersey, one-st'y pitch dwell., 21′ and 24′ x 30′.

Story Place, Ward 23, for Mrs. James Lee, Jr., two-st'y hip dwell., 33′ 6″ and 39′ x 39′; ell, 13′ x 17′; Holmes Brothers, builders.

Rutherford Ave., cor. Mills St., Ward 4, for David Stearns, two-st'y flat stable, 20′ and 23′ x 43′ and 51′.

Dave St., cor. Nash Court, Ward 14, for Mary A. D. Lewis, three-st'y flat dwell., 16′ x 32′.

Nash Court, Nos. 7 to 8, for Mary A. D. Davis, 2 three-st'y flat dwells., 16′ x 32′.

Lamartine St., cor. Ramond St., Ward 23, for Michael Doyle, three-st'y pitch dwell., 21′ and 26′ x 33′ 10″; John Potton, builder.

Brooklyn.

Building Permits. — *Tompkins Ave., No.* 81, three-st'y frame double tenement, tin roof; cost, $4,350; owner, Jno. Jung, 79 Tompkins Ave.; architect, T. Engelhardt; builder, G. Loeffler.

State St., s s, 100′ e Court St., three-st'y brick office and factory, gravel roof; cost, $5,000; owner and builder, Geo. Litchfield, 81 Schermerhorn St.; architect, C. Werner.

Rush St., n w s, 125′ n e Wythe Ave., 2 two-st'y and basement brownstone front dwells., gravel roofs; cost, each, about $4,000; owner, R. Taylor, 111 Clymer St.; architect and builder, J. H. Devoe.

Tompkins Ave., s e cor. Madison St., three-st'y brick store and dwell.; also, on Tompkins Ave., adjoining corner, 4 two-st'y and basement brick dwells., tin roofs; cost, corner $8,000, and inside houses each $4,500; owner, Paul C. Grening, 420 Gates Ave.

Harrison Ave., No. 170, three-st'y frame double tenement, tin roof; cost, $4,000; owner, A. Lealinske, on premises; architect, T. Engelhardt; builders, G. Straub and J. Rueger.

Chicago.

Apartment-House. — The Union Club will build a six-st'y apartment-house on a lot owned by it, fronting on Dearborn Avenue.

Warehouse. — A four-st'y brick and stone building will soon be erected at the corner of Dearborn and South Water Streets, by Porter Brothers.

Houses. — Mr. William N. Linn is building a house on Michigan Ave., designed by Burnham & Root.

Mr. Charles Linderman will build a two-st'y brick house at the corner of Diversey and Halsted Streets, Lake View; cost, $6,000.

Building Permits. — R. Jourssen, two-st'y brick flats, 22′ x 30′, 1890 Lake St.; cost, $2,000.

Wm. Baylis, two-st'y brick flats, 21′ x 49, 3228 Dearborn St.; cost, $2,700.

D. Himrod, three-st'y brick dwell., 24′ x 40′ Belden Ave., near Clark St.; cost, $7,000.

Union Riding Club, brick riding-school building, 72′ x 150′, 527 and 531 North Clark St., to cost, $22,000.

Robert Fish, three-st'y basement store and dwell., 25′ x 80′, 528 West Madison St.; cost, $8,000.

H. Walsh, two-st'y basement brick flats, 21′ x 50′, 274 North May St.; cost, $4,000.

E. B. Pease, two-st'y brick flats, 24′ x 45′, 375 Park Ave., to cost, $3,500.

B. Shannon, two-st'y basement brick dwell., 21′ x 48, 439 Ohio St., to cost, $3,500.

F. June, four-st'y basement brick factory, 54′ x 99′, Lasalle and Ontario Sts.; cost, $15,000.

P. H. Rice, two-st'y brick flats, 21′ x 52′, 129 Walnut St.; cost, $3,400.

W. C. Carroll, two-st'y basement brick dwell., 22′ x 40′, 263 Burling St.; cost, $4,500.

P. H. Mathei, three-st'y basement brick dwell., 30′ x 72′, 250 and 252 South Halsted St.; cost, $20,000.

John Schmelz, two-st'y brick dwell., 21′ x 57′, 763 Van Buren St., to cost, $3,000.

David Tubins, four-st'y brick store, 25′ x 99′, 101 Indiana St.; cost, $20,000.

Olaf Oleson, two-st'y brick dwell., 20′ x 40′, 527 West North Ave.; cost, $4,000.

S. Ingebretzen, 2 two-st'y brick dwells., 24′ x 48′ 202 and 204 May St.; cost, $3,500.

City of Chicago, two-st'y brick police station, 20′ x 56′, to cost, $3,000.

A. Williams, two-st'y brick flats, 46′ x 60′, 327 to 341 Oakley St.; cost, $9,000.

W. Kubitska, two-st'y basement brick flats, 25′ x 70′, 337 North Carpenter St., to cost $3,000.

Jas. Koeller, two-st'y brick flats, 21′ x 50′, 292 Larrabee St.; cost, $3,000.

Wm. H. Zink, two-st'y brick dwell., 21′ x 42′, 3348 Forest Ave.; cost, $3,000.

H. Eisert, three-st'y brick flats, 24′ x 64′, 622 Wells St.; cost, $6,500.

S. Schrainek, 2 two-st'y basement brick dwells., 20′ x 40′, 444 Clinton St.; cost, $3,000.

Louenske & Miketynske, three-st'y brick store and flats, 25′ x 90′, 689 Milwaukee Ave.; cost, $7,000.

G. Fritz, two-st'y brick store and dwell., 24′ x 70′, 279 Taylor St.; cost, $5,000.

M. Wheeler, three-st'y basement brick store and flats, 24′ x 70′, 2635 Calumet Ave.; cost, $6,000.

Sears Building, 2 brick additional stories, 40′ x 60′, 99 and 101 East Washington St.; cost, $8,000.

H. B. Mathews, Jr., two-st'y basement brick dwell., 23′ x 54′, 26 Clarkson St.; cost, $3,500.

J. B. Lynch, three-st'y basement brick dwell., 25′ x 60′, 212 Oak St.; cost, $7,000.

Carl F. Julin, three-st'y brick dwell., 23′ x 47, 170 Schiller St.; cost, $5,000.

Cincinnati.

Wages. — The limestone masons have demanded a raise in wages from $3 to $3.50 per day. It is expected that their wages will be thus advanced without any strike.

Trouble is expected between the freestone workmen and their bosses. The former demand that all hands shall be paid alike, without any regard to the skill of the workman, putting all workmen upon an equal footing. The bosses say that this is unjust to both high and low grades of men, and that they will resist to the bitter end.

Cleveland.

Asylum. — Retreat, on St. Clair St.; cost, $15,000; Samuel Laue, architect; Sayles & Co., contractors.

Foundry. — Pipe-foundry on the Lake Shore Railway, near Cass Ave., for Silas Merchant; cost, $10,000; Walter Blythe, architect; L. C. Cuttell & Jno. Gill, builders.

School-Houses. — West High School; cost, $75,000; Eisenmann & Sully, architects.

School-houses for Wards 6, 13, 15 and 17; cost, $30,000 each; Eisenmann & Sully, architects.

Houses. — Frame dwell. on Sibley St., for Andrew Dall; cost, $6,500; G. H. Smith, architect; Sayles & Co., contractors.

Frame dwell. on Sibley St., for C. B. Couch; cost, $7,400; J. M. Blackburn, architect; Sayles & Co., contractors.

Frame dwell. on South Logan St., for Phil. Morris; cost, $8,000; Walter Blythe, architect; Sayles & Co., contractors.

Dwell. on Prospect St., for Fred. Pelton; cost, $18,000; Cudell & Richardson, architects; Sayles & Co., builders.

Two dwells. on Case Ave., for C. C. Cobb; cost, $6,000 each; Coburn & Barnum, architects; Mr. Cass, builder.

Dwell. on Sterling Ave., for Wm. Bingham; cost, $3,000; F. C. Bates, architect.

Dwell. on Chestnut St., for H. M. Brainard; cost, $9,000; N. P. Charlott, architect.

New York.

There is a remarkable quietness this week in architects' offices, though a number of important projects are in embryo.

Apartment-House. — For Mr. E. H. Just, an apartment-house, 50′ x 80′, seven stories high, is to be built on Twenty-fifth St., near Sixth Ave. The first st'y is to be brownstone, above brick with terra-cotta finish. The cost will be about $60,000. Mr. M. C. Merritt is the architect.

Extensions and alterations are to be made to Nos. 437 and 439 Sixth Ave., from designs of Messrs. D. & J. Jardine; and the same architects have planned an addition to the Five Points House of Industry.

Building Permits. — *Morton St., No.* 86, five-st'y brownstone front tenement, tin roof; cost, $14,000; owner, John A. Frey, 118 Second St.; architect, Wm. Graul; builder, Geo. B. Christianson.

Seventieth St., s s, 219′ w First Ave., 4 four-st'y brownstone front tenements, tin roofs; cost, each, $15,000; owner, Jacob L. Maschke, 198 Division St.; architect, John C. Burne.

Seventieth St., s s, 224′ e Third Ave., 6 four-st'y brownstone front tenements, tin roofs; cost, each, $16,000; owner, architect, etc., same as last.

First Ave., n e cor. Sixty-third St., five-st'y brick tenement and store, tin roofs; cost, $16,000; owner, Sarah E. Hinman, 43 West One Hundred and Thirty-first St.; architect, J. H. Valentine; builders, Patrick Lawlor and S. C. Staples.

First Ave., e s, 25′ 5″ n Sixty-third St., 3 five-st'y brick tenements and stores, tin roofs; cost, each, $15,000; owner, architect and builder, same as last.

One Hundred and Twenty-sixth St., n s, 325′ e Seventh Ave., 2 three-st'y and basement brownstone front dwells., tin roofs; cost, each, $13,000; owner, Thos. Dunn, First Ave., cor. One Hundred and Sixth St.

Ave. A, s e cor. Fifty-sixth St., two-st'y brick tenement, tin roof; cost, $3,000; lessee, Peter Block, on premises; architect, A. T. Wilson; builder, Thomas Fitzgerald.

Valentine Ave., e s, 200′ s Fordham Landing Road, two-st'y frame building, shingle roof; cost, $4,750; owner, Clara M. Penguet, Fordham; architect, A. C. Neuman; builders, Poole & Priker and G. W. Reeve & Son.

Fifty-eighth St., s s, 250′ e Second Ave., 3 five-st'y brick and stone tenements, tin roofs; cost, each, $13,000; owner, Morris Reinhart, 648 Madison Ave.; architect, A. B. Ogden.

West Twenty-ninth St., Nos. 227 *and* 229, five-st'y brick factory, tin roof; cost, $10,000; owner, John J. Bowers, 240 West Twenty-ninth St.; architect, Jos. M. Dunn.

One Hundred and Twenty-fourth St., n s, 223′ e Third Ave., 2 five-st'y brownstone front flats; tin roofs; cost, $55,000; owner, Anthony Smyth, 165 East One Hundred and Twenty-fourth St.; architects, Cleverdon & Putzel.

Lexington Ave., w s, 64′ s One Hundred and Twenty-seventh St., three-st'y brick dwell., tin roof; cost, $7,000; owner, Richard P. Risden, 129 East One Hundred and Twenty-sixth St.; architect, J. H. Valentine.

One Hundred and Twenty-fifth St., n s, 285′ e Sixth Ave., four-st'y brick tenement and store, tin roof; cost, $12,000; owner and builder, Wm. P. Burdsell, exr., 1960 Madison Ave.; architect, J. H. Valentine.